DOCUMENT RESUME

ED 283 797 SP 028 989

TITLE	Women's Health. Report of the Public Health Service Task Force on Women's Health Issues. Volume II.
INSTITUTION	Public Health Service (DHHS), Rockville, Md.
PUB DATE	May 85
NOTE	352p.
PUB TYPE	Reports - Descriptive (141)
EDRS PRICE	MF01/PC15 Plus Postage.
DESCRIPTORS	Drug Abuse; Drug Use; Economic Factors; *Females; *Mental Health; Minority Groups; Nutrition; *Older Adults; Physical Fitness; *Physical Health; Preventive Medicine; *Social Influences; Violence

ABSTRACT

This report identifies a broad spectrum of issues affecting women's health and is divided into four sections: (1) social factors affecting women's health; (2) women's physical health and well-being; (3) health concerns of older women; and (4) issues related to alcohol, drug use and abuse, and the mental health of women. The Public Health Service Task Force responsible for the report identified critical issues through the work of ten regional meetings that provided perspectives from state, local, community, and provider representatives. Findings from these meetings are discussed and suggestions for action, a summary, a conclusion, and references are offered. Papers commissioned for the report by the Task Force are included and deal with the following issues: (1) "Alcohol and Maternal and Fetal Health" (Kenneth Warren); (2) "Arranging for Child Care: Implications for the Well-Being of Employed Mothers and Their Children" (Martha Zaslow, and others); (3) "Cancer in Women" (Harriet Page); (4) Guidelines for Avoiding Methodological and Policy-Making Biases in Gender-Related Health Research" (Jean A. Hamilton); (5) "Heart Disease in Women" (Barbara Packard); (6) "Immunizations of Special Importance to Women" (Ida M. Onorato); (7) "Nutritional Issues in Women" (Artemis P. Simopoulos); (8) "Osteoporosis" (Lawrence E. Shulman); (9) "Premenstrual Syndrome" (Miriam Davis); (10) "Smoking and Women's Health" (Thomas J. Glynn and Joseph W. Cullen); (11) "Systemic Lupus Erythematosus" (Lawrence E. Shulman); and (12) "Special Health Concerns of Ethnic Minority Women" (Audrey Manley, and others). (JD)

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Women's Health

Report of the Public Health Service Task Force on Women's Health Issues

Volume II

1798

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service

The Public Health Service (PHS) Task Force on Women's Health Issues was commissioned by Edward N. Brandt, Jr., M.D., during his tenure as Assistant Secretary for Health. On receiving the report of the Task Force in October 1984 and accepting the recommendations, Dr. Brandt established the PHS Coordinating Committee on Women's Health Issues. The appointed members are directed to work with the PHS agencies to implement the Task Force recommendations.

The views and conclusions expressed in this document are those of the Task Force and the authors who prepared commissioned papers for our consideration. The Volume represents the advice provided by the Task Force to the PHS as the agency works within its areas of jurisdiction and expertise to improve the health and well-being of women in the United States.

Acknowledgements

As Co-Chairpersons, we would once again like to acknowledge the efforts of all members and alternate members of the Task Force and the Task Force subcommittees who took the time from their already busy work schedules to participate in this series of studies and deliberations, who prepared excellent written reports, and submitted thoughtful recommendations. We also gratefully acknowledge the efforts of the Public Health Service Regional Health Administrators and their staffs in sponsoring the Regional Meetings which contributed to our overall report.

We particularly want to thank those who prepared the excellent special reports commissioned by the Task Force and included in this volume.

Special thanks to Margaret Suter and Valerie Williams for the smooth and coherent flow of this report which resulted from their editing and to Carole Sweeney for all her help in the typing and preparing of this volume.

Finally, we wish to dedicate this volume to Valerie Williams who served as the Task Force Executive Secretary. Without her efforts the report would not have been completed. Her contributions to the PHS Task Force on Women's Health Issues are appreciated.

D. H Merritt
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Ruth L. Kirschstein, M.D.

Foreword

In his Foreword to Volume I of this Report, published in the January, 1985 issue of Public Health Reports, the then Assistant Secretary for Health, Dr. Edward N. Brandt, Jr., wrote:

> "Why a report on women's health? That is a reasonable question considering the reports of the past on the subject of women's health and well-being. However, society has changed and women are moving in step to address the demands of changing circumstances. As a Nation, we have learned from the challenges of past decades and we are now preparing ourselves to address the challenges of the future. Women in America are involved in a spectrum of activities today that were barely on yesterday's horizon, they are making significant contributions to America, and are looking foward to the future. But with this panoply of opportunity has come the need for all of us to assess how the health risks for women are also changing in response to this new set of demands."
>
> This report does not focus strictly on the diseases and problems unique to women in the traditional sense--that is reproductive problems--but rather is devoted to assessing the problems of women's health, in the context of the lives women in America lead today."

These statements are equally true in the fall of 1985. The Task Force presents Volume II of its report which expands on and amplifies the material presented in Volume I.

The Task Force wishes to thank Dr. Brandt for his support and to rededicate itself to continued efforts to improve the health of women in the United States, thereby improving the health of all Americans.

Ruth L. Kirschstein, M.D.
Chair
Task Force on Women's Health Issues
U.S. Public Health Service

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Introduction

The Public Health Service (PHS) Task Force on Women's Health Issues was directed to examine the status of women's health in the context of the lives women lead within the diversity of our society. Through the leadership of the Task Force Chair, Dr. Ruth Kirschstein, and the Co-Chair Dr. Doris Merritt, the appointed members undertook a comprehensive review of women's health in the United States and the factors impinging on those conditions of health and well-being.

As a Nation we are becoming increasingly aware of the environmental, economic, social, and demographic characteristics which can influence our individual health status. The Task Force paid special attention to these issues in terms of the direct and indirect effects they may have on a woman's health status. We have also noted as a relevant and significant factor that when a woman is a member of an ethnic or cultural minority, if she is physically or mentally disabled, or if, for any reason, she is outside the normal range of societal expectations, her health status is at greater risk.

To identify and assess women's health, we approached the task by beginning our assessment at the onset of menarche. Our hypothesis was that the health differences between girls and boys, and between women and girls could reasonably be segregated at this stage. Yet, we also recognized that each woman is an individual who moves through the life stages at a uniquely individual pace--thus markers denoting physical or emotional maturity or both, are at best, only benchmarks. The threads of similarity between women, and the unique conditions affecting women, are explored in each of the chapters of this volume. Each chapter also includes one or more commissioned papers prepared at the request of the Task Force to further explore subjects particularly relevant to women's health.

Methodology of the Study

To supplement the deliberations of the Task Force and subcommittees, the Task Force conducted two activities under the auspices of subcommittee initiatives. These activities are described below.

Regional Meetings. Task Force subcommittee charged to identify regional perspectives on women's health issues developed a framework for assessment. With the support of the subcommittee and Task Force members, the PHS Regional Health Administrators hosted sessions on women's health, during the month of January 1984. These "regional meetings" were held in Boston, New York, Philadelphia, Atlanta, Chicago, Kansas City, Dallas, Denver, Seattle, and San Francisco. The meetings were designed to provide a balancing perspective for the Task Force based on the insights of State, local, community and provider representatives.

The Task Force also sponsored a symposium on women's health which was held in March 1984 at the National Institutes of Health in Bethesda, Maryland. Participants in the symposium included PHS personnel, the Task Force members, and representatives of the national organizations with specific concerns and perspectives on the topic of women's health.

In addition to those who were invited or expressed interest in making formal presentations at these sessions, many members of other non-Federal health organizations and women's groups attended and presented their views on the health problems of women. Those who could not be present were encouraged to forward their comments, ideas or concerns about women's health to the Task Force.

Summary of the regional meetings. The theme that seemed to dominate all of the regional sessions was that women's health is directly related to their access to sound information and quality medical care. The participants agreed that while there is a trend toward greater equity in the distribution of medical care in the U.S., economically disadvantaged women are medically underserved. With regard to research, participants expressed interest in the initiation of studies that include women, as well as men, and asked that increased attention be focused on research and health issues that apply specifically to women's health.

Participants made a number of recommendations for women themselves to implement. Several presentors suggested that women intensify their networking and support group activities to foster self-awareness and to encourage healthier female role modeling.

Although many of the regional meetings included remarks and comments unique to that area of the country (for instance, Appalachian women who feel geographically isolated from the mainstream of the American health care system; poor Black women in Mississippi who feel that childbirth is a time of special risk for them because of lack of access to prenatal care; lesbian women in New York City who feel insensitivity on the part of health care providers; and American Indian women who feel that alcoholism is a special risk for them), the regional meetings were more similar than dissimilar.

Common concerns were repeated at each meeting, concerns related to access to care, contraception for teenaged girls, health problems of aging women, health problems of the reproductive system, cancer, family violence and incest. In most cases, the problems expressed seemed to indicate that American medical care is excellent, but that access to that care, sensitivity during the provision of the care, and the desire to enhance accessibility to health information and education are the overwhelming needs for American women.

The continuing need for biomedical research in certain areas of interest and concern to U.S. women was stressed by many of the participants and widely recognized as the major contributor to the excellence of the U.S. medical care system. However, the thread common to all the regional meetings seemed to be the more diffuse issues of access, sensitivity, and health information and education.

The full reports and the hundreds of recommendations that resulted from the regional sessions were discussed and reviewed at length by the Task Force. The issues raised through the regional meetings are reflected in the Task Force report.

Inventory of Public Health Service Programs. The inventory of Public Health Service (PHS) activities and programs related to women's health was developed and conducted by a subcommittee of the Task Force to provide the Assistant Secretary for Health with a comprehensive description of recently completed, ongoing, and imminent PHS programs addressing women's health.

The Task Force found that although a number of statistical and management information systems exist within the PHS, they are not structured for the ready retrieval of information specific to women's health activities. The inventory project was the first PHS effort to identify major activities that relate to women's health within the Service's five major agencies and other major components.

Since PHS agencies support or conduct multi-faceted biomedical and health services research, information dissemination, technical assistance, resource development, and service delivery efforts, it was apparent that all of these initiatives would include efforts that relate to aspects of women's health issues. Therefore, the inventory was compiled using the five criteria developed by the Task Force to differentiate a health problem, condition, or disease as a woman's issue:

- diseases or conditions unique to women or some subgroup of women;
- diseases or conditions more prevalent in women or some subgroup of women;
- diseases or conditions more serious among women or some subgroup of women;
- diseases or conditions for which the risk factors are different for women or some subgroup of women; or
- diseases or conditions for which the interventions are different for women or some subgroup of women.

An additional distinction was made between diseases and/or conditions that affect women (or some women) differently (i.e., a medical, physiological, or sociological difference), and those diseases and/or conditions that affect women differently because of access, resource, or delivery mode considerations. Examples of the first type include diseases such as osteoporosis, X-linked hereditary traits, mental illness, and functions of the female endocrine and reproductive systems. Examples of the second type include availability of health insurance, existence of adequate health care services, and other barriers to health care.

The questionnaire instrument was distributed to the heads of PHS principal operating components. Over 200 were completed by components of the PHS. Each questionnaire was assessed for clarity and completeness. Problems or clarification issues were resolved through follow-up telephone calls and, in some instances, personal interviews.

Results of the inventory. Respondents indicated more than 25 women's health issue areas are addressed by their activities. The scope of issues identified by responses (N = 202) include, but are not limited to, these general areas: general health; social, behavioral, and mental health; reproductive health; specific illnesses/dysfunctions; women's interactions with the health care system; women's participation in the health care system; and health technology.

An examination of reported data suggests that there is concern for women in their roles as:

- consumers of health care services;
- service providers in the health care system; and
- extra-market (or unpaid) providers of health care and promotion services to families and the community.

The scope of health issues addressed also suggests that PHS components are concerned with problems which differentially affect females such as specific diseases, occupational and environmental health hazards, access to appropriate health services, and safety of health technology applications.

The overwhelming proportion of respondents (N = 116) classified their activities as, at least in part, research.

There is not, at this time, sufficient accessible and reliable data to identify estimates of cost for each reported activity. This lack of availability reflects a generic problem of great difficulty in allocating costs for activities which are not specified in a budget line-item.

Despite these uncertainties, the fact remains that the PHS spends a considerable amount of its budget on women's health.

The following set of descriptors indicating focal points to describe the general objectives of public health services and/or organizational strategies were selected.

- health promotion and/or disease prevention;
- detection and/or diagnosis of a disease;
- treatment and/or rehabilitation;
- improving access to health services;
- quality control/assurance; and
- cost containment.

Although an activity may have one or more focal points, an analysis indicates that selection of health promotion/disease prevention was the most frequent response (N = 155), a finding in keeping with the data on the number of reported activities directed towards research, evaluation/analysis, and education/training operations. Detection/diagnosis of diseases as well as treatment/rehabilitation were selected the second most frequent emphasis reported.

Female groups identified as the primary focus of specific PHS activities include, but are not limited to:

- ethnic and/or racial groups, including females of Hispanic heritage, Blacks, Indo-Chinese, and decendants of Native Americans;

- recent immigrants;

- occupational groups, including federally-employed women, videodisplay terminal operators, clerical and/or secretarial workers, and female workers exposed to potentially toxic chemical agents, infectious diseases, or diagnostic X-ray technologies;

- female residents of long-term and short-term health care facilities;

- females handicapped and/or disabled by specific diseases and/or conditions;

- females affected by changes in lifestyle or life-events;

- females living in rural or urban settings; and/or

- females living with families whose adjusted income was near to or less than established poverty levels.

Some respondents identified victims of sexual abuse and domestic violence as a target population group. These social and health problems are the topics of activities reported by CDC and ADAMHA. There are also data systems with the capability to provide data on women, their characteristics, their health status and/or their use of health services. This is especially true for NCHS and NCHSR activities. In addition, there are reported programs on Fetal Alcohol Syndrome (FAS) prevention, treatment and services which examine the problems of pregnant drinkers as well as FAS effects on female offspring.

The respondents to the inventory noted that it was not always possible to provide information on the proportions of women involved or affected by an activity. As in the case of level of effort, it is usually possible to estimate the number of females studied by a single research grant--sampling frames for such an activity may dictate prior knowledge of this as well as demographic information on such a group. However, multifaceted or clustered projects may not have information on women (and their characteristics) routinely available.

The Task Force Recommendations

In producing the Task Force report and recommendations, the members identified areas where the circumstances for women are unique, the noted condition is more prevalent, the interventions are different for women than for men, or the health risks are greater for a woman than for a man. This multi-faceted approach helped the Task Force generate sixteen recommendations including one general recommendation to the Assistant Secretary which stated:

> *The Public Health Service should continue to review and monitor its activities in regard to women's health, and further to implement and periodically update the recommendations of this Task Force. This should be done under the auspices of the Office of the Assistant Secretary for Health.*

The remaining recommendations were presented under six major headings. The recommendations and a brief highlight of the rationale presented to the Assistant Secretary follows.

Promoting a Safe and Healthful Physical and Social Environment

(1) *Current laws must be implemented and enforced and regulations developed and enforced to ensure that all people, regardless of socioeconomic status, have a safe and healthful physical and social environment.*

(2) *Women should increase their efforts to become aware of environmental and behavioral risk factors, as well as factors that promote health and prevent illness, and further, women should take action to influence the personal and political processes that bear a relationship to their health.*

The Task Force recognized the fact that by the year 1990 many current demographic and social trends will have had a predictable effect on the social status of women in society and consequently on their health status and need for health services. For example, as more women enter into, and remain in, the labor force, discrepancies in earnings between the sexes may diminish. It is expected that expansion in the labor market will be greatest in traditionally female occupations: secretaries, sales clerks, food service workers, health aides. In addition, the home will increasingly become a place of reimbursable employment.

At the close of the twentieth century the percent of the population over age 65 will rise from 11.3 to 12.7; of these approximately 60 percent will be women. Because of the nature of the available data, the Task Force was compelled to define the older woman as a person over 65 years of age. There is a continuing need to recognize the heterogeneous nature of this population because the health needs of older women differ according to their age. For the older woman other variables also can affect her health including her educational status, ethnic or cultural background, socioeconomic status, and geographic location.

The three most important social changes affecting women's health at the present time are:

(a) the increasing numbers of women living in poverty;

(b) the unprecedented entry of women into the labor force, including women with infants and young children, and;

(c) the continuing increase in the longevity of women.

Society as a whole must begin to take these changes into account if programs and policies are to be of maximum benefit. The relationship between poverty and ill health cannot be overemphasized. Similarly, the disproportionate number of women living in poverty calls for major societal attention. When a woman is a single head of the household and the sole support of her family, her situation is further complicated.

Providing Services for the Prevention and Treatment of Disease

(3) *Consideration should be given to establishing a priority area within the Public Health Service regarding the management of chronic illnesses which cannot now be prevented.*

(4) *Efforts to increase access to health care should be initiated for women who are underinsured and/or elderly, and for those who are geographically of socially isolated, or isolated by virtue of ethnic minority status.*

A comprehensive system of health services should be ensured. This should include preventive services for all women, with particular attention to the underinsured and the geographically isolated. Many chronic illnesses cannot be prevented but they often can be managed so as to minimize their effects. The greater longevity of women contributes to their greater risk for chronic diseases. While access to services is important for all women, it is a particular problem for women confronted by poverty, and/or geographic or social isolation.

The need for services such as home health care or community-based physical and mental health care for older people, especially women, should be addressed by cooperative efforts of the Federal, State, local and private sectors. Programs are needed for respite for care providers and for adult day care centers to relieve chronic social isolation of, and exhaustion and depression in, (a) younger and middle-aged women caring for an older, chronically ill dependent in the home; and (b) older women caring for a chronically ill dependent of any age in the home.

Conducting Research and Evaluation

(5) *Biomedical and behavioral research should be expanded to assure emphasis on conditions and diseases unique to, or more prevalent in, women in all age groups:*

  (A) *Research efforts should be expanded to develop more effective and acceptable, as well as safe, contraceptive methods for both men ans women, with special emphasis on the needs as they vary by age, and those particularly of handicapped and retarded women.*

  (B) *Studies must be expanded on the causes, prevention, improved diagnosis and treatment of devastating and debilitating diseases such as cancer of the breast and reporductive system, sexually transmitted diseases, arthritic conditions including lupus, osteoporosis, and certain mental disorders.*

(6) *Longitudinal research should be undertaken to assess how behavioral and social factors interact with biological factors to affect the health of women over the life course.*

(7) *Data should be collected and analyzed from state and Federally supported surveys on the demographic characteristics of the population by age, sex, and race across income groups in order to permit better utilization of such data by health policy makers.*

(8) *The workplace should be studied to identify and correct health hazards for women as well as for men.*

(9) *Research should be undertaken to better understand those cultural conditions and socialization practices that affect women's health differently than that of men.*

Regardless of what the leading causes of morbidity and mortality in women may be, women themselves appear to be primarily concerned with those diseases about which they perceive little is known or for which appropriate therapies have not been determined. Furthermore, women are deeply concerned with the need to regulate the time and number of their pregnancies.

Many methodological problems as well as a lack of data limit our understanding of the status of women's health and the particular needs and services required. The need for data that are relevant to health and are sex- and age-specific by race and ethnicity is crucial. Existing data sources should be reviewed as to their ability to provide such information. New studies should, whenever feasible, appropriately sample Black, Hispanic, Asian and Native American women to provide sufficient numbers for analysis. Since current data may have limited usefulness when all those over age 65 are grouped together, additional separate age categories should be studied.

A systematic effort must also be made to address issues relating to gender bias in research and clinical practice and which lead to inadequate attention to the needs of women.

Recruiting and Training of Health Care Personnel

(10) *A national goal should be established to increase the number of women in key positions in health practice, administration, research and education as rapidly as possible.*

(11) *Each continuing education program for health professionals should be designed to assure that the health needs of women in all segments of society are addressed.*

In spite of recent advances, women continue to be underrepresented in key decisionmaking positions in the health professions. To the degree that lack of representation diminishes the capability of the health system to identify, and be adequately responsive to, the particular health needs of women, it is necessary to enhance that capability. The PHS, and indeed all sectors, should continue to encourage participation and increased representation of minority and women health providers in the public and private health care delivery system.

It is important that training curricula for service providers, such as physicians, administrators and policymakers, reflect adequate attention to the specific health needs of women--and particularly to services for the population of aging women. Examination of the curricula in many health professions schools reveals that little attention is given specifically to the older years of adult life.

Educating and Informing the Public, and Disseminating Research Information

(12) Educational and outreach programs should be initiated and/or expanded by relevant public and private organizations and the public media to communicate the importance of a healthful lifestyle.

(13) A working group of key individuals in the fields of television, film, publishing and advertising should be organized to examine the effects of media images on health.

(14) The Public Health Service should make special efforts to disseminate up-to-date research information.

The influence of the media on our lives is powerful, pervasive, oftentimes subtle, and for the most part incalculable. The potential to serve as a positive source of information and education on health issues is similarly great and as yet, not fully tapped as a resource.

There is a continuing need for a comprehensive, unified and consistent approach to educating and informing women about all aspects of their health. Women must be supported in their efforts to recognize and fully comprehend the serious health risks associated with behaviors such as smoking, and drug and alcohol abuse. At the same time, understanding of the dangers of such behavior in women should be reinforced by health practitioners, the media, and relevant agencies, both public and private. Further, women of all ages should be actively encouraged to adopt practices to maintain a healthful lifestyle and to enhance well-being.

Designing Guidance for Legislative and Regulatory Measures

(15) All organizations interested in women's health and well-being should:

(A) *continue to make deliberate efforts to be informed regarding legislative, policy, and service issues that affect women's health,*

(B) *promote information exchange and public education on health matters, and*

(C) *be advocated for organizational and public policy changes needed to improve and promote health conditions for women.*

In order to assure that issues regarding the health of women receive appropriate and continuous attention in the future, the leadership of the Nation must be involved in developing guidance, and in some cases, new legislative proposals and regulatory changes. Such activities can best occur if there is substantial interest in the community.

Summary and Conclusions

It is clear that to achieve and sustain good health a number of criteria are important. It its necessary to have a safe and healthful physical and social environment, an adequate income, safe housing, good nutrition, access to preventive and treatment services appropriate to the groups to be served, and a population that is educated, and motivated to maintain healthful behaviors. Thus, the maintenance of good health is a societal as well as an individual responsibility and is the combined responsibility of Federal, State and local governments, private sources, professional and community organizations and citizens themselves. Above and beyond this, there is much that is as yet unknown and requires continuing research and aquisition of knowledge.

In the context of the Task Force report, we have placed special emphasis on the continuing need to keep the public, particularly women, involved and informed about matters of health and well-being. We feel that heightened emphasis on disease prevention and health promotion will provide a significant source of information to women, as well as facilitating longer term benefits.

During the course of our study it became apparent that a wide variety of expertise regarding the health of women exists at the Federal, State, and local government level, within the public and private sectors, in the community, in the academic sphere, in the family and within women themselves. A collaborative approach designed to address the opportunities presented by these recommendations could be implemented as a vehicle for improving the health status of American women. Within the context of issues identified in this volume it is evident that many activities are particularly amenable to collaborative approaches. We have learned that the scope of attention required to address women's health in an active and responsive manner is by no means strictly confined to the arena of public health or the Public Health Service.

The following report identifies a broad spectrum of issues affecting women's health in the context of the Task Force criteria. It is our hope that this report will serve to initiate and generate continuing discussion between the various components of the public and private sectors who have reason to be concerned about these issues. By meeting this objective, this report can help set the stage for all of us to contribute to the means and methods necessary to address women's health concerns as we continue to strive toward our goal of improving the health of all people.

* * *

Chapter One

Social Factors Affecting Women's Health

Introduction

Fundamental changes are occurring in the manner in which the Nation's health problems are viewed. It is recognized that improvements in health status are no longer likely to come soley from technological "breakthroughs" but also from environmental and social change, from changes in lifestyle, and from the participation of people in their own health care. As causes of mortality and morbidity have shifted from infectious diseases to chronic illnesses and accidents, the need to focus on health policies that promote healthful conditions and behaviors has received increasing attention.

Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention, 1979, points out that behavior choice is a factor in every one of the 10 leading causes of death. Behavioral factors such as smoking, use of alcohol, and type of diet are risk factors for heart disease, cancer, and low birthweight of infants. Solar radiation, worksite hazards, and other environmental conditions are known to be risk factors for cancer. Social and economic factors related to level of income, marital status, racial and ethnic background, education, occupation, and living arrangements all may affect health directly and impinge on health practices and behaviors and thus have implications for wellness and for illness.

Women in the United States tend to live about 8 years longer than men, but they have higher rates of illness, more disability days and they utilize more health services than men, even when controlling for pregnancy-related services (1). Numerous biological and social factors are thought to contribute to this paradox of greater morbidity and longer life. The biological factors that contribute to these phenomena are examined elsewhere in this report. This section is focused on exploration of the major social and behavioral factors that affect women's health and their access to, and utilization of, health services.

Societal attitudes towards females, the socialization of girls and women, differing economic and occupational status between men and women and among women as well as changing attitudes toward the family, sexual behavior, and living arrangements, all have implications for women's health. These social factors contribute to health and quality of life and must be considered if Public Health Service programs and other national, State, local, or community efforts are to continue to address the needs of American women.

Examination of the social conditions influencing health status can provide information important to men as well as women in preventing illness and premature morality. It has been hypothesized that some of the social factors that influence health behavior of women may have a protective effect; similarly some social factors may place men at greater risk of early mortality (2). Among women, willingness to report symptoms and seek health services results in early identification and treatment of illnesses which may contribute to greater longevity. Among men, increased risk-taking behavior and reduced health-seeking behavior accounts in part for the difference in longevity between the sexes.

Between 1930 and 1960, differential mortality rates between men and women increased rapidly, largely because mortality from accidents were higher for men than for women. The sharply increasing female mortality advantage began to slow in the 1970's, but continues to grow, albeit at a slower pace. The slowing of this differential between male and female mortality rates is due to a stabilization of deaths from motor vehicle accidents, cerebrovascular diseases, and congenital anomalies, and to a narrowing of the sex differential for diseases of infancy, homicide, and for gastro-duodenal ulcers. The social component in most of these causes of mortality is well established.

In recent years, there has been a quickening in the rate of social change, accompanied by shifts in social behavior and social roles. Among the most important of these changes have been increasing rates of poverty among women, entrance of large numbers of women into the labor force, and changes in family and household structure and the growth of the over age 65 population of women. These changes have had implications for women's access to health services and for their health.

The Public Health Service has supported and conducted a wide range of research on demographic, economic and social conditions that affect morbidity and mortality. An inventory of such research was reviewed for this report. It is not the purpose of this chapter to review or cite all relevant research. Only selected highlights of some of the social factors that affect women's health will be summarized and major gaps in the knowledge base identified. These highlights are organized around five areas (followed by a series of opportunities for progress). The five areas are:

- Cultural and Social Values and Attitudes,
- The Relationship of Economic Status to Health,
- Labor Force Participation, Occupation, and Health Status,
- Family, Household Structure, Social Supports and Health, and
- Interactions with the Health Care System.

Cultural and Social Values and Attitudes

Human behavior is shaped by cultural and social values and attitudes. In recent decades, the United States has undergone a revolution in the traditional relationship of women to work, money, marriage, family, and themselves. Many of today's women were raised with values and attitudes by which they no longer live. The responses of women are varied. Some yearn to return to the more familiar ways. Others embrace the new values and attitudes but still seek ways of incorporating them into their daily lives. Younger women may have a set of expectations for their lives different from those of the previous generation of women. Each age cohort grows up and lives with a different set of social, economic, demographic and technological realities. These values have implications for women's health behaviors and attitudes, for their health status, and for psychological well-being.

Included in this section are brief discussions of cultural diversity, socialization, physical fitness and sports, "ideal" body image, changing social attitudes related to smoking behaviors, cultural attitudes reflected in mass media, sexual attitudes and behaviors, and violence against women. Because of the far reaching effects of the mass media on many aspects of women's lives, discussion of this issue is the most extensive.

Cultural Diversity. Within the United States there is a wide diversity among the various ethnic and racial minorities. There is also wide diversity of ethnic and social background within each racial group. "Asians," for example, include Japanese, Chinese, Korean, and Vietnamese. This category includes third-generation residents, recent arrivals, rural and urban populations, the highly educated and those with limited schooling. Similar diversity exists among Hispanics, Native Americans and Blacks. Even within one ethnic group of Hispanics, such as Chicanos, wide social, economic, and cultural differences exist.

Beliefs about the etiology, nature, and prognosis of illness vary greatly among racial and ethnic groups and from region to region, but the relationship of these beliefs to the onset, course, and outcome of illness has been little studied. Such studies as do exist often fail to consider gender differences within specific groups.

Major differences exist between various cultural groups in "illness behavior," the term used to describe how individuals respond to feelings they experience as abnormal (3). This concept includes how people monitor their bodies, how they define their symptoms, and how and when they seek help through the formal or informal health system.

The gap in research on differences between health beliefs and attitudes of different ethnic and racial groups too often is matched by a lack of sensitivity to these issues by health providers and the health care delivery systems. There is a similar lack of data on sex-race differences in handling various illnesses and how these affect the onset and course of illness.

Socialization. From the moment of birth, children begin to be socialized to assume and develop an identity based on a gender role. While psychological differences between girls and boys have not been demonstrated in newborns, they do emerge rapidly. Before their third birthday, most children can identify their own sex, as well as that of others, and know which clothes and toys are more appropriate to boys and girls. They also develop a sense of which behaviors are more appropriate for their own gender. Many children learn early in life that boys and the activities of boys have higher status in the society. The traditional patterns of behavior and self-concept into which girls and women are socialized have both positive and negative implications for health behavior and health outcome. In the past, society did not expect women to become intellectual, aggressive, assertive, successful or powerful, and most women did not develop these characteristics--precisely the attributes needed to succeed in the marketplace (4).

Recent research indicates that there has been little change in the ways boys and girls are socialized or in the characteristics for which they are rewarded (5).

- Historical and current U.S. socialization patterns indicate that although individual differences outweigh gender differences on ability variables, boys are more apt to be socialized and reinforced for behaviors that are independent, objective, risk-taking, competitive, logical, skilled, and decision-oriented. Girls are more often reinforced for behaviors that are more gentle, sensitive, tactful, dependent, and passive.

- In reviewing the effects of such sex stereotyping and of sex bias in the schools, the U.S. Commission Civil on Rights found that girls still are routed into sex-segregated educational tracks that affect occupational aspiration. This in turn leads females to low-wage occupations in which they will encounter lifelong difficulty in developing an adequate economic status.

- Results of a current study indicate that the differential reward system for boys and girls has not changed. In this study of more than 100 school systems, beginning with nursery school, through the early grades and beyond, it was found that teachers unwittingly favored male students over female students. As a general pattern, teachers involved boys more in learning, encouraged motivated interruption from boys, called upon boys more, rewarded boys, but not girls, for assertive, independent, creative behavior (6).

Considerable evidence has been amassed in the last decade to indicate that this form of socialization leads women to internalize self-concepts that predispose them to higher rates of depression. The cognitive style of women and the coping style called "learned helplessness" are described in chapter four which addresses issues related to alcohol, drug abuse, and mental health problems among women.

Attitudes toward physical fitness and sports. Strenuous games, sports, competition, and exercise traditionlly have been viewed as signatures of masculinity--so much so that they imposed problems for the boy who did not enjoy them and for the girl who did. While this traditional view of sport, exercise, and gender identity has changed drastically in recent years, it has had a profound influence on the physical development of girls and boys.

As outlined in a report to the Women's Sport Foundation and the United States Olympic Committee, from preschool years, boys, even preschoolers, engage in much more gross motor activity than girls. Through the elementary years this pattern continues, possibly influenced by socialization practices and social attitudes as much as by physical capabilities. By the time children reach adolescence this differential activity pattern has visible results. Having had more "time on task," males typically are more athletically skilled than females.

The pattern is changing, as a result of the women's movement (especially the implementation of Title IX as an instrument for equalizing physical education opportunities for young men and women in school) and a widespread realization, among women and men, that exercise is a basic health need (7).

The effects of increased athletic and sports activity on women's health has been best studied within physical education programs in schools and among elite, highly trained athletes. The effects on health of a person's being a recreational sports enthusiast who follows a regular regimen for physical fitness are not nearly as well known--particularly among women, for only recently have women been included in research study samples (8). A 1981 review on the relationship of physical fitness training and mental health does suggest that physical fitness training leads to improved mood, self-concept, and work behavior (9).

The strong national trend toward physical fitness and the acceptance of women as professional and recreational athletes can be seen in several arenas: increased funding for women's sports--school, amateur, and professional; (a) active marketing of sports clothes and equipment for women; (b) specialized magazines devoted to women's sports and fitness; (c) advertisements featuring women athletes as endorsers of commercial products; and (d) increasing numbers of community and commercial organizations focused on women's fitness and sports (10).

In short, there has been an overall increase in approval of sports for women and girls, and the traditional definition of femininity has been expanded to include sports experiences. Furthermore, it can be expected that the increase in physical activity will have long-range positive effects on women's health. Nonetheless, there are subtleties and exceptions in the changing attitudes so that some athletic women still experience societal pressures related to the acceptability of their interests and activities (11).

Culturally defined standards for "ideal" body image. The high value that American society places on physical attractiveness for women influences almost everything a woman does. The standards for what constitutes attractiveness, however, are not always realistic and sometimes not even healthful. A youthful appearance is a requirement for physical attractiveness much more for women than for men, and the differences in attitudes toward the aging process for men and women can be detrimental to the older woman's self-concept, self esteem, and mental health.

The "ideal" female body type--as portrayed in entertainment, advertising, and fashion media--emphasizes thinness. Within health professions the accepted definition of obesity is a weight 20 percent greater than the average for one's height and sex, and average weights have risen in recent years (12). Yet the current preoccupation with thinness leads some women to consider themselves obese even when their weight is well within normal limits.

A review of norms for Miss America contestants and Playboy centerfold models shows that over three decades, the normative weight for these women has decreased by 15-20 pounds (13). There is growing concern that the ideal body weight, as perceived by the general public, may be at a level lower than that needed for normal or healthy body functioning, especially for adolescents and young women (14). Moreover, widespread concern for thinness as a mark of beauty and sexual attractiveness is thought to be associated with apparent increases in the number of young women suffering from serious, even life-threatening, psychiatric disturbances known as anorexia nervosa and bulimia.

Sexual attitudes and behaviors. Changing social attitudes toward sexual behavior have affected American women in various ways although research in this area is still underdeveloped. These changing attitudes affect various groups of women differently, depending on age; income; geographic location; religious, ethnic, and cultural group; individual preference; and marital status.

A few of the effects of changing attitudes towards sexual behavior have been measured and some are reported by clinicians, but many can only be supposed. Research on sexuality has been limited, as noted in a 1982 conference on women's health sponsored by the Public Health Service:

> "The study of both male and female sexuality in Western science has been hampered by a set of beliefs and myths that have been slow to change. Because it has been a taboo topic both in the drawing room and in the laboratory, research on sexuality has been particularly vulnerable both to social myths and to the assumptions that men have made about how women feel or should feel about their sexuality" (15).

In the past, research on sexuality was limited to counts of "how early, how often, and with whom." More recently, a body of research has been initiated in universities and medical schools about the broader range of sexual experience.

We now know that sexual responsiveness, as contrasted with the capacity for reproduction, is seen early and continues throughout life. The male fetus has erections in utero, and lubrication of the vagina begins in girls shortly after birth (15). The full range of research on sexual attitudes, behavior, sexual preference and choice, sex role differences, and the physical and emotional satisfactions and problems relating to sex are just beginning to be regarded as serious areas for scientific attention. In recent years more than 20 scientific periodicals have begun to publish studies of human sexuality.

Changing sexual attitudes have provided women of all ages with the potential for greater freedom and increased choice of lifestyle. As described elsewhere in this chapter, there is some evidence that an increasing proportion of young women engage in sexual activity before marriage and have intercourse at an earlier age than in the past. Some studies suggest that contemporary women as a group may have more sexual partners before, during, and after marriage than seems to have been the case in previous generations. Very recently, research has begun to provide information about the sexual preferences and life styles of homosexual and bisexual women.

The increased freedom permitted by these changes creates greater satisfaction for some women and increased concern and anxiety for others. We know that young girls, even before their teen years, feel peer pressure to engage in sexual intercourse. Many lack even the most fundamental sex information, and most are ill prepared to deal with their own emotional reactions. Women of childbearing years have an increasing number of contraceptive choices available. Concern about the choice of a contraceptive and the worry about the possible side effects of the contraceptive is an additional source of anxiety for many women. This increased freedom has the potential for increased satisfaction and fulfillment, but may bring new responsibilities and anxieties.

Changing attitudes and smoking behavior. In the early 1900s, few women smoked cigarettes. By the late 1920s, the social acceptability of smoking by women began to increase. After World War II, women began taking up this habit in large numbers. The rise coincided with the increasing social acceptability of smoking, cigarette advertisements directed towards women, the frequent use of cigarettes in movies and on television, and the lack of knowledge about the serious health risks of smoking. By 1965, one-third of women smoked and more than half of men smoked (17). Following the 1964 Surgeon General's Report on Smoking and Health, the appearance of the warning label on cigarette packages in 1966, and the removal of cigarette commercials from television and radio in 1966, a substantial decline in smoking occurred among men, and a somewhat later and slower decline occurred among women.

In 1980, an estimated 24,000,000, or less than 30 percent, of women smoked. While there is virtually no difference in smoking rates of Black and White women, Blacks smoke less heavily than than do Whites. However, for both Black and White women the percentage of those smoking more than 25 cigarettes per day is increasing (18).

The results of some studies have led to the conclusion that it is more difficult for women to quit smoking than for men. (19).

A disturbing aspect of the overall decline in smoking is that, although smoking among adolescents has also declined, more girls than boys smoke regularly. The otherwise unexplained epidemic increase of lung cancer among women is thought to be due to smoking and has been called "an equal opportunity tragedy." As attitudes towards smoking continue to change, and as the social acceptability of smoking wanes because of knowledge of the health risks, women, like men, will have the opportunity to make a critical change in behavior that will have profound positive effects on their physical health.

Violence against women. Each year, 3 to 4 million women are beaten in their homes by husbands, ex-husbands, boyfriends, lovers, and more than 82,000 cases of forcible rape are reported to police.

Recent research suggests that three sets of cultural attitudes influence wife-battering and how it is treated: (a) this practice has a long history and is considered by some people to be a man's prerogative; (b) many women are powerless, or feel they are powerless to leave an arrangement in which they are subject to abuse; and (c) authorities are reluctant to intervene in what is considered a family matter.

The medical implications of battering were described in a monograph prepared for the National Institute of Mental Health in 1981. It was noted that 21 percent of all women who use emergency room services are battered. It was also reported that although many women are battered throughout the course of their lives, the problem remains virtually unrecognized by the medical system, despite the fact that battered women often seek emergency medical and psychiatric aid (20).

Sexual assault, another serious kind of violence against women, has diverse, serious, and long-lasting health consequences. It is known that as many as half of all rapes are not reported; thus data on the incidence of rape and sexual assault can only be estimated. An estimated 71 of every 100,000 females in the country were reported to be rape victims in 1980--a 6 percent increase over 1979. (Uniform Crime Reporting definitions only include female victims of forcible rape.) Since 1976, the reported rate of forcible rape has risen 38 percent. This may be due to better reporting, or to an increase in the actual rates of offense.

In addition to sexual assaults on adult women, sexual abuse of children is considered a major public health problem by mental health professionals. Underreporting appears to be widespread because of fear of family disruption and of stigmatization resulting from disclosure. There is little doubt that sexual abuse is as frequent and as damaging as physical abuse to the long-term development of children. The National Center for Child Abuse and Neglect conservatively estimates that 100,000 children are sexually abused yearly, and that a high proportion of such cases involve the parents or other adult figures familiar to the child. Clinicians estimate that up to half of their female clients have experienced sexual exploitation at some time in their lives. Yet, it has been pointed out that clinicians are not sufficiently sensitive to the widespread incidence of sexual abuse or to the etiological implications of such abuse for psychiatric illness (21).

Reduction in the frequency of sexual abuse among women and children will require social and behavioral modifications such as changing attitudes that foster violence towards women and children, increasing the ability of women and children to avoid sexual violence by strengthening their self-concepts, helping women and children aquire coping skills and the ability to defend themselves, increasing community awareness of sexual violence, and affirming women's control of their bodies and their responsibility to support each other in enforcing control (22).

Cultural attitudes in mass media. A potent component of cultural and social pressures on women is their portrayal and treatment in the wide array of entertainment and news media--television, film, radio, newspapers, magazines, and popular music. The effect on women's health can be analyzed from two perspectives: (a) the ubiquitous influence of mass media on attitudes, values, and health practices--through words, images, content selection and placement, character portrayal, editorial perspective, advertising; and (b) health education and health promotion that is accomplished through mass media.

Sex role stereotyping. There is reason to believe that media images are directly related to women's self-concept and mental health (23). This issue has been the focus of many efforts by women's advocacy groups to influence media practices. Attention has centered on studies of sex role stereotyping, underrepresentation or misrepresentation of women, the emphasis on physical attributes of women, and the depiction of violence against women.

There is little doubt that the single most influential instrument of mass media today is television and evidence accumulated over the past decade supports the notion that television viewing affects people's attitudes, behaviors, and perceptions of what is real in the world (24).

While television probably is the most pervasive form of mass communication, other media also influence social attitudes and health behaviors. Print advertising has been harshly criticized for its contributions to damaging sex-role stereotypes as well as for its glamorization of alcohol consumption. Popular musicians and the recording industry have been accused of promoting drug use and sexual experimentation by youth through the lyrics of popular songs. Magazine publishers have a widespread influence on the public, and a wide variety of magazines are included in the "women's market." Women's organizations have criticized the consistent relegation of news related to women to the "women's pages" of a newspaper or to the last few seconds of a news broadcast.

Health influence. Although television is such an important feature of daily life in this country, suprisingly little attention has been given to its influence on physical and mental health—for women or for men. The most stringent codes set by the National Association of Broadcasters for message content and visual representations related to health are those applied to advertising of health-related products—including a ban on cigarette and liquor advertisements on radio and television. The guidelines for health portrayals in the dramatic content of entertainment programs are not specific; in effect, the portrayals are governed chiefly by artistic judgments related to entertainment and dramatic effects.

Cigarette advertising directed toward women is a powerful force in print media. In 1980, the cigarette industry spent over $90 million to advertise in just 20 magazines that have a high readership of 18-24 year old women (25). Furthermore, "women's magazines" carrying a heavy volume of cigarette advertising also run far fewer articles about the health risks of smoking than do magazines that carry little if any such advertsing (26). Certain "women's" cigarette brands are promoted widely through advertisements dominated by social stereotypes of feminity, featuring images of sexual attractiveness, slimness, "feminine" success, and other contemporary views of women.

Television falls short of its potential for offering constructive health information. The effects of modeling health-related behaviors on television have not been studied systematically, but research on the health content of entertainment gives cause for concern, since unrealistic images of risk-taking and destructive health behavior are commonplace. For example, heavy drinking, reckless driving, and unhealthy eating habits are portrayed regularly with little or no mention of risks or health consequences of such behaviors.

There is widespread concern that television portrayals help to create an atmosphere in which violence is considered normative. Violence is commonplace in television programming, and it is frequently linked to sex and to mental illness. Women, particularly older women, are frequently portrayed on television as victims of violence--far more often than they are victims in real life. Some researchers feel that women who watch a great deal of television may limit their mobility unnecessarily because they become more fearful than warranted (24).

Health education campaigns. Health education campaigns have been targeted through mass media in an effort to convey a particular message about health and to persuade the audience to heed these messages. A few efforts by private and public sponsors have been directed specifically to women--for example, encouraging breast self-examination for early detection of cancer and discouraging alcohol consumption during pregnancy to prevent the fetal alcohol syndrome.

Critics have noted that mass media messages, particularly in the health field, emphasize individual responsibility and behavior and tend to ignore social, political, economic, and environmental factors that may profoundly influence whatever behaviors are being considered. Nonetheless, communications experts and health professionals are cautiously optimistic about the potential for mass media as an effective tool for widespread health education.

In summary, it can be said that there are many social and cultural expectations that affect women's health. The media play an important role in disseminating these attitudes and values which affect health-related behaviors such as physical activity, diet, smoking, and sexual practices. There is particular need for further research that takes into account racial and ethnic differences in cultural values, attitudes, and behavior since these too have health implications.

The Relationship of Economic Status to Health

There has been a general improvement in the health of Americans in recent decades, but many groups of Americans still have a health disadvantage that is associated with their economic disadvantage. It is not easy to establish a direct link between poverty and ill health, but numerous indices suggest an association. Disadvantaged people become ill because of poor nutrition, poor living conditions, high levels of stress and reduced access to health care. Then, because they are ill, they may miss work or lose their jobs and may become even poorer.

As a group, women are economically disadvantaged relative to men, regardless of age, race, ethnicity, education, or employment status. Data from the Bureau of Census, the Bureau of Labor Statistics, and the Congressional Budget Office confirm that women in the United States are becoming increasingly disadvantaged. Black, Hispanic, and Native

American women, particularly those who are single heads of households, have long had particularly high rates of poverty. They are now being joined by the "nouveau poor": white, middle-class women rearing children alone and older women subsisting on small fixed incomes. Overall, almost 78 percent of the poor in the United States are women and children. Among the elderly poor, 74 percent are women (27). In 1983, 80 percent of all female-headed households had an income of less than $15,000 (27). This included their own earnings, alimony, child support payments, and all other sources of cash income.

Neither employment nor education protect women from an economically disadvantaged status relative to men. A woman who works full time earns about 59 percent of what a male worker earns (28). The average college educated woman earns less than the average male high school drop out (29).

When differences among women are examined, better educated women do, however, have lower rates of poverty. For example, among all households headed by women, the poverty rate in 1981 was 40 percent for those with less than 8 years of education, 28 percent for high school graduates, but only 17 percent for those with one or more years of college education (30). Similarly, among minority women, increased education does reduce the likelihood that women will be poor. For Black women the poverty rate declines from 57 percent of those with less than 8 years of education to 27 percent of those with one or more years of college. For Hispanic women comparable rates are 62 percent, and 28 percent. As the percent of women achieving higher education increases, the percentage who are poor can be expected to decrease.

The economic dependence of women on men has changed rapidly in recent decades, but single, widowed, or divorced women are far more apt to be poor than married women (31). The interaction between marital status and economic status differs by race, ethnicity and life stage. White women who are heads of households are less likely to fall into the poverty category than Black women. Overall, only 28 percent of families maintained by White women but 56 percent of those maintained by Black women are below the poverty level (29).

Low financial status of women, whether married, single, divorced, or widowed, is associated with perceived poorer health status. Great differences in perceived health status by race as well as income also have been reported. Low income women of all races perceive that they have worse health status than higher income women, but minority women report dramatically worse health status. For women with incomes less than $12,000 annually, 59 percent of White women, 73 percent of Black women, and 78 percent of Hispanic women report poor health. For women with incomes above $20,000, 23 percent of White women, but only 7 percent of Black women, and 2 percent of Hispanic women perceive their health as poor. Similarly, findings of the Health Interview Survey Data in 1981 indicate that low income women report a disproportionate amount of the total days of restricted activity (33).

Income, insurance and health care. The relationship between availability of health insurance, use of medical care, and health status is complex and not fully understood. However, data from the National Health Care Expenditures Survey (NHCES) show that minorities and the poor are most affected by the financial risk from uninsured medical care costs and the increased health risks arising from postponed utilization of medical care services (34).

The conclusions reached were: (a) for both men and women, better health status is associated with having private insurance, (b) individuals with health insurance use more ambulatory care than those without it, (c) utilization rates are higher for women, for people with lower income, for older people, for Whites and for those with employer-paid disability leave, and (d) the higher utilization rates of the poor appear to be related to levels of disability (and perhaps to health status).

In a further preliminary analysis NHCES data in 1983, only small differences were found in private insurance coverage between men and women (70 percent for men vs. 67 percent for women). These analyses also indicated that more Whites of both sexes had private insurance in addition to Medicare than did Blacks and Hispanics. In the over 65-age groups, only 5 percent of Whites had both Medicare and Medicaid coverage. This increased to 25 percent for Black males and 55 percent for Hispanic males. The rates were 9 percent for White females, 37 perceet for Black females, and 44 percent for Hispanic females.

Thus, it appears that women are only slightly less apt than men to be covered by private insurance. Of those over age 65, women are more apt to be covered by Medicaid, with or without Medicare, and minority women are far more apt to have Medicaid coverage, reflecting the economically disadvantaged status of women in general and minority women in particular. It should be noted that these data are based on surveys, and some of the population estimates, particularly regarding Hispanics, may be questionable. However, in the aggregate, small but consistent differences in coverage between men and women are found, with Medicare-Medicaid coverage higher for Black women but lower for Hispanic women.

In summary, it can be said that the specter of poverty is a real one for a disproportionate percentage of women of all races. Most low-income women of all races perceive that they have poor health, with almost three-fourths of poor minority and two-thirds of poor White women reporting poor health. The implications of differences in utilization rates are not entirely clear, but low-income women, as a group, utilize both outpatient and inpatient services more, and report more days of restricted activity. Women are only slightly less apt to be covered by private insurance than men. Women over 65 are far more apt than men to be covered by Medicaid.

Labor Force Participation, Occupation, and Health Status

The rapid rise in labor force participation of women has been the single most extensive social change in recent years. Employment of large numbers of women has changed the workplace, the market place, the family, and women themselves. This increase in employment rates of women has been termed "the silent revolution." This section reviews selected aspects of female employment which have implications for women's health.

Employment is related to health in numerous ways: it affects levels of income, access to insurance and pensions, and access to health care, and it brings about changes in occupational risks and hazards, in levels of stress, and as well in life style.

Both casual observation and data support the rise in female labor force participation. Women made up only 30 percent of the paid labor force in 1950, rising to 44 percent by 1980. Currently, about 52 percent of all U.S. women age 16 and over are in the labor force, but between ages 25 and 35, more than 65 percent of women are employed. The most rapid increases have been among married women and especially those with preschool children (35). Even women with infants are in the labor force in growing numbers.

The gap in earnings between men and women continues to grow. In 1974, the average earnings of men exceeded those of women by 56 percent. Today, men's earnings are 75 percent higher than women's (36). The concept that men work to support families and women work for "extras" or for self-fulfillment endures, though the reality is that 68 percent of working women are the sole wage earners for themselves or the family unit.

Contrary to popular belief, women have always contributed to the economic functioning of the family, only the locus of the economic activity has changed. Prior to the industrial revolution there was less separation between home and work place. Women and men could remain in the home while fulfilling economic as well as reproductive functions. Men and women worked side by side in maintaining the home, producing goods and services, and rearing the children. The industrial revolution brought about a shift in roles as men left the home to enter the workplace. Subsequent changes in employment patterns have resulted in a narrowing of the differences between male and female employment rates. As more mothers of young children have entered the labor force, the need for adequate child care has increased. The results of considerable research document the need for day care and the effects of day care on children. However, virtually no studies have examined the effects of day care or the lack of it, on the health and well being of mothers.

Trends in employment. Recent employment trends have shown a general shift from blue collar work to service and white collar work, areas in which women predominate. However, the present information or technology revolution will undoubtedly alter the structure of the white collar workforce even further. Changes to come will include elimination of many monotonous, repetitious tasks and creation of new technological opportunities on the one hand and employment displacement, downgrading jobs, and the reduction of middle management on the other. Middle-management jobs, particularly in the clerical field, have represented one of few career-ladders for women. The impact of a decline in this occupational category means not just the loss of a few jobs but the loss of potential career development. It is forecast that not only will job displacement outweigh new job creation but also that the number of new jobs will not absorb women at the same rate as men (37).

Although individual differences in ability far outweigh gender differences (38) views persist that men are innately superior in logic, business skills, and decisionmaking (39). From early childhood, females as well as males learn to downgrade women's performance or devalue women's worth (40-43). Young women still are less apt to pursue studies in areas that are in increasing demand, such as mathematics, science, and computer science. If this trend continues it is likely that the concentration of women into the bottom of the labor hierarchy will continue.

Fears that employment growth will slow as workers are replaced by the very machines they learn to master are not unfounded. The current proliferation of automation reduces the demand for persons with manual dexterity, traditional craftsmanship, and concrete thinking with increased demand for individuals with more formal and technical knowledge, precision, and perceptual aptitudes, and ability to handle abstract concepts. It may follow that only workers with the financial and intellectual means to pursue these skills can be selected for the newly created high-tech positions, leaving the majority of the workers to compete for the low status jobs.

Another example of change in the workforce is the shift towards performance of work on company-installed equipment in the home instead of in the office. The benefits to women who perform paid jobs at home include accessibility to children and conservation of transportation and work wardrobes. The drawbacks include isolation of the worker from peer support, role models, on-the-job mentors, and exchange of pertinent information. Reduction or elimination of paid vacation, health care insurance, pension plans, and other fringe benefits often accompany the shift of worksite to the home.

The relationship between social factors such as occupational segregation, psychosocial job factors, earning and benefit differentials, ergonomics, and the role of occupational health and health care access are intertwined, and are discussed in the following sections.

Occupational segregation, mobility, and its consequences. Recent work patterns show that one of the most pervasive and enduring facts of life for women workers is their concentration in occupations in which most of their coworkers are women. Occupational segregation by gender is as widespread now as it was at the turn of the century, and continues to depress wages in those occupations in which women are predominant (44). More than one-third of working women are in clerical jobs. Women constitute 99.2 percent of secretaries, 97.5 percent of bookkeepers, and 97.5 percent of receptionists.

Other than physicians, most health care workers are female; the National Institute for Occupational Safety and Health (NIOSH) has found health care workers to be at high risk for the effects of exposure to toxic substances. Other occupations are similarly as segregated: of all primary and secondary school teachers, 71 percent are women, and more than 98 percent of kindergarten teachers are female.

Blue collar occupations typically are "male" occupations. The 19 percent of blue collar workers who are women often have the lowest in status and pay, and their jobs are characterized by health hazards, repetition, and monotony. For example, in the textile industry, more than 95 percent of sewers and stitchers and 69 percent of spinners are women. Similar segregation exists in such occupations as shoemaking, hairdressing and cosmotology, restaurant service, meat wrapping, hotel janitorial service, manufacturing of novelties and jewelry, and electronics.

Non-white workers are concentrated in several hazardous industries and minority women are further concentrated in the least desirable and most dangerous jobs within these industries. The U.S. Equal Opportunity Employment Commission reported that, in 1978, minority workers constituted 61 percent of unskilled or semi-skilled manual workers and 55 percent of skilled factory workers in the laundry, dry cleaning, and garmet services industry (45). Minorities are disproportionately represented among household workers, in textile mills, in factories producing agricultural chemicals and in certain segments of the health care industry--all occpations with high health risks.

Women tend to work in occupations which appear to be less risky because there are fewer physical hazards which lead to obvious injury or death. Risk of injury to men who are construction workers, welders, heavy equipment operators is immediately obvious. The health hazards to women who work in textile mills, in food processing plants, or as clerical workers are less immediately obvious and are more cumulative. However, most research on occupational hazards has been done in occupations in which men predominate. Thus, the risks and health outcomes in predominantly female occupations are unknown.

There is need to develop data on occupational hazards by age, race, and gender so that the risks and health outcomes for women can be assessed. One example that demonstrates the need for further research on occupational health differences for women is the Framingham Study (46).

It shows that the 10 year incidence rates of Coronary Heart Disease (CHD) were highest for men and lowest for currently employed women and housewives. The women most prone to heart disease were clerical workers who were married to blue collar workers, had three or more children in the home, had not received promotions, and had unsupportive supervisors. This finding is important for health promotion and disease prevention programs, most of which have been targeted to prevent CHD among men. Programs can now be developed for supervisors and to help the very large numbers of clerical workers who are married with children in the home.

The relationship between professional or managerial status and women's health is one that requires further research. While the Framingham study found that women in high status occupations had lower rates of heart disease, another study found that female physicians and psychologists have three times the expected suicide rates as their male counterparts (47). These authors suggest that these professional women lack the acceptance of their male colleagues, and are lacking in peer and other social supports. The role played by social supports as a mitigating variable needs further examination.

The interaction between marital status and labor force participation of women is one that highlights the importance of social factors in health and illness. It was reported in the Framingham study that single working women, the group that had the longest time of employment outside of the home, had the lowest rates of heart disease. Similar finding related to mental health is that employed, never-married women have the lowest rates of depression (48). Level of income also appears to be a mediating variable between occupational stress and health outcomes that should be controlled in all such studies (49).

Pensions, worker's compensation, benefits. Because of the greater longevity of women, pensions, and Social Security benefits are of great significance for their well-being. Women who are not in the paid labor force rarely are covered by their own pensions or life insurance programs. Those who are in the labor force often are at a disadvantage because of lower compensation rates and intermittent employment. This disadvantage is applicable to both private pensions and Social Security benefits:

- In 1980, only 10 percent of women 65 and older received income from private pensions or annuities. The median amount of this income was $1,400 per year. Twenty seven percent of men 65 and older collected private pensions or annuities with a median income of $3,000 from private plans.

- Women's benefits under Social Security are expected to be two-thirds of men's through the year 2055, under current law, yet 33 percent of single elderly women depend on Social Security for more than 90 percent of their income. Women who are homemakers receive nothing on their previous earnings record for every year over five that they are not employed for pay. Such women are particularly disadvantaged if they are not eligible for benefits as spouses.

- In many States, worker's compensation is based on wage rates. Since women's wages are generally lower, compensation is often at a rate that makes women's benefits lower and economic survival more difficult. Worker compensation programs are not designed to consider the fact that when mothers are disabled, they may be unable to fill each or all of their three major roles: paid worker, unpaid home worker, and caretaker of children.

It is clear that consideration should be given to the differential work histories of women as well as to their contributions to child rearing as revisions to Social Security legislation proceed.

The health effects of multiple roles. It has been assumed widely that as women's participation in the labor force increases morbidity and mortality patterns in women would show greater similarity to those in men. "If women are going to live like men, they are going to die like men" was the caption of a recent magazine article. Morbidity and mortality data have been examined for differences between the sexes, but the effect of labor force participation on women's health awaits further study. Few existing health status studies have controlled for income, occupational and marital status, the presence of children in the home and social supports, all of which are relevant to understanding the relationship between health and multiple roles.

What is clear is that women are taking on new roles outside the home without giving up old roles. The greatest stress for a working women seems to occur as a result of children in the home rather than as a result of marriage, per se (50). Employed mothers continue to assume almost full responsibility for housework and child care. While media features reports of men who assume household chores, studies have failed to document such as shift on a widespread basis. Time budget studies show that the father of a young child spends very little more time doing housework when his wife is employed than if she is not employed (51). When work is defined as time spent in employment plus time spent in household tasks and child care, full time housewives work least, employed wives most, and men in between. The International Labor Office estimates that the average man spends 50 hours a week at work in his place of employment and at home, whereas the average woman spends 80 hours. Work overload has been associated with coronary deaths (52), escapist drinking, work absenteeism, lowered self-esteem (53) and increased cholesterol levels (54, 55). A study of college-educated working mothers of young children showed that women continue to spend a great deal of time in child care but give up sleep and leisure time to do so (51). Once relieved of child care responsibilities, many midlife women find themselves responsible for caring for elderly parents. It has been shown that because of such family responsibilities, employed women have substantially more unscheduled absences from work than do employed men. However, the total time per absence per worker is lower for women than for men.

The question remains as to what the health consequences are of multiple roles. Women who need to be home to care for children and other family members at the same time that they need to work to support themselves and their families experience role conflict. Continual pressure not to miss work even when a child is ill may increase the anxiety about not being a "good mother" or a "good worker". The lower the woman's economic status, the more this conflict is exacerbated. Most working women are unlikely to have sufficient funds to obtain help with housework or baby sitting. Thus, the effects of role overload on the physical and mental health of women needs further study. The paper which follows this chapter on "Difficulty in Aranging for Child Care" further explores some aspects of this dilemma.

Not all research supports the conclusion that serving in multiple roles has negative effects. Although inconclusive, the results of many studies show that work has a beneficial effect on mental health (56). Employment, marriage and parenthood are associated with good physical health for both men and women (57). The Framingham Heart Study, as previously noted, found that employment, per se, did not increase the risk of coronary heart disease. Other studies have found that women with paid jobs appear to be more satisfied than housewives because jobs can be a source of self-esteem, independence, status, and social network enhancement as well as income. Other studies have found that employed women have more positive coping strategies (58, 59).

Recent research regarding the involvement of women in multiple roles concludes that only the role of parenting contributes significantly (p. 01) to "role overload". The quality of the "work role" and the quality of the "mother role" also seem to be related to overload (50). The quality of experience in the maternal role also determines the number of symptoms of anxiety that women report. Serving in multiple roles can be viewed as advantageous as well as stressful depending on the nature of the job, the motherhood and of marriage.

Satisfaction with roles may be more important than the number of roles. Reviews of the literature (56, 60) show that serving in multiple roles is associated with better physical and mental health. Verbrugge (60) points out that social selection may be operating. Women with better health take and keep employment outside the home and also may be more likely to marry and stay married. Haw (56) notes that cost studies involving women lack specificity regarding either the work or the family environment. She recommended that future studies be longitudinal and prospective and provide more details on work and family responsibilities. Such studies might explain the reason for better health among employed women: whether it is that healthier women are employed or that employment has a protective effect on a woman's health. Greater specificity in research is also necessary to determine what kinds of effects particular types of jobs have on the health of employed women.

Ergonomic issues affecting women's health. Negative health and mental health outcomes have been associated with physical and psychological aspects of working conditions. A number of studies have found that poor physical health, depressed mood, and escapist drinking problems are associated with difficult working conditions.

Using equipment that does not fit the worker causes safety and health problems for all workers but especially for the female worker. For example, personal protective equipment, from respirators to gloves and boots, is designed for males and thus is often too large for most women. Ill-fitting equipment not only is ineffective, but may also be hazardous. Levers on machines that are too high to reach, or tools that are too heavy or cumbersome have caused disabilities, dismemberment, and death for women workers. Women, needing the work and the pay, do not want male peers to think they cannot do the job, so they seldom complain about such problems and are often injured. When injured, they often fail to report the injury.

Problems with new automated office equipment have contributed heavily to a sharp increase in visual and musculoskeletal symptoms among white collar workers. Too often equipment, such as video display terminals, has been installed without planning placement so as to avert glare and other illumination difficulties; postural problems; back, neck, and wrist pain; and a host of other symptoms both psychological and physiological (61-63).

Most studies of the workplace have examined stressors on an individual basis. Rather than any particular stressor disrupting health and well being, it is more likely that such a disruption is the accumulation of many daily, unsolved difficulties combined with other hazards on the job. All these factors increase the risk of poor health. The combination of family demands and workplace stress represents a special set of problems for many working women, particularly those with children in the home. The low status and lack of mobility in typical "female" jobs adds yet another area of stress. Most research on occupational stress has been done on male occupations rather than those in which women predominate. Few studies have examined the interface between work life and family life for men or for women. Such research is needed if we are to understand current health risks and conditions.

Family, Household Structure, Social Supports and Health

Rapid social changes have significantly affected family and household structure, function, and capability. Among the most significant social changes affecting the family are increases in labor force participation of women, in divorce rates, in single person households, in longevity, and in options in the planning and spacing of children.

"Family" and "household structure" are important concepts related to social aspects of health, particularly for women. It is important to broaden the concept of family to include "household structure." No longer does the typical household consist of an employed husband and a wife who remains in the home and cares for the children. Increasingly, alternate forms of households include single-person households and unrelated persons sharing a household. While "family and household" are terms often used synonomously, "family" implies legal and emotional ties. In contrast, "household" implies living arrangements and physical proximity, sometimes temporary, sometimes long term. Only the most basic issues relating to family and household structure and to health will be discussed in this brief review.

Knowledge is increasing about the behavioral components of health and illness. As the basic unit of socialization, the family or household is the place where health habits and other behavior patterns are learned, practiced, and reinforced. The family or household is important, not just because it shapes health behaviors, but because it continues to be the place where most of the care occurs for short-term acute illnesses and many contagious ones, as well as for those that are chronic and long term. Family or other household members provide the bulk of nursing services. Most of these home health providers are women. The ability to provide this care and the burden of doing so are affected by changes in family and household structure.

In addition to its role in demonstrating health behaviors and caring for the ill, the family is an important part of the individual's general system of emotional and social supports. The results of considerable research have shown that social supports serve as a buffer against stress and are beneficial for health, and the absence of such supports has negative effects (64). Increases in single-person households, in geographic mobility, and in household disruption have reduced the ready availability of social supports. It is not clear that adequate mechanisms have been developed to substitute for family supports. The question of how to develop social supports outside of the family and household is an important one to study since it is more feasible to develop opportunities to increase the availability of social supports than to reduce stressful conditions (65).

Another important relationship between family or household and health develops from the role of the family in maintaining economic well-being.

Most people derive their economic well-being through the family or household in which they live, and this is an important component of health maintenance since it influences access to health care, good nutrition, and the quality of the environment, for example, in terms of neighborhood and housing. Changes in family and household structure influence economic well-being most clearly in the case of divorce. Following divorce the vast majority of women, and especially women with children, experience a decline in their economic well-being. There is a 50 percent reduction in average household income for women 35 years and older and a 38 percent reduction for women under 35. The great increase in the number of women living in poverty has been characterized as "feminization of poverty." In 1982, of the 17,000,000 ever-separated or divorced women, only 15 percent were awarded alimony (27).

The effect of lower earnings of most women, combines with a lack of child support to reinforce poverty. Many women are not awarded any child support, and of those who are, less than half receive the full amount awarded by the courts.

Patterns of family formation including marriage and childbearing also affect health. While the vast majority of all people still ultimately marry, they are doing so later in life. Between 1970 and 1982, the percent of never-married women under age 34 doubled from 6 to 12 percent. This means many more young adults are single and the predominant pattern is for them to live alone. Just as women and men are delaying entry into marriage, many women are also delaying motherhood. For a minority of women, delaying motherhood may mean foregoing it, but there is ample evidence to show that marriage and family continue to be highly valued. Despite declining family size, more women are now experiencing parenthood than was true a generation ago. In 1980, only 10 percent of the women aged 40 were childless, as compared with 22 percent of the 40-year-olds in 1950. At the same time, women are bearing fewer children. After a long-term historical decline in fertility, birth rates rose after World War II, peaking at about 3.2 children for women born in the 1930s (66). Today, young women report their intentions to have 2 or fewer children, however, the pattern of delaying childbearing makes it questionable that they will achieve this goal: delayed childbearing is associated with increased risk of cesarean delivery, chromosomal abnormalities, and other perinatal problems. It is unclear the extent to which the ability to conceive declines with age, but delaying motherhood does allow more time for a woman to develop health conditions that may contribute to obstetrical risk. These risks must be balanced against the social characteristics of older obstetrical patients who tend to have higher educational levels, and income both of which relate favorably to pregnancy outcome (67).

Another social change has been the increased likelihood of women becoming single parents. The birth rate for unmarried women has risen steadily since the 1940s. The sharp downturn in the fertility rate of married women means that unmarried mothers are making up an increasing proportion of all those giving birth. While out-of-wedlock pregnancy among teenagers has received the most attention, the pregnancy rates for single women in their twenties are higher, and those for previously married women are not insignificant. Out-of-wedlock childbearing is more prevalent among Black women in whom rates are four times those of Whites (68). Today, 56 percent of Black babies are born to single women. Childbearing out-of-wedlock often is associated with fewer socioeconomic resources and with less adequate prenatal care, which combine to mean increased health risks for the mother and the child. It is of note that for some mature women, including some homosexual women, childbearing out-of-wedlock is a well-thought-out choice.

The considerable attention given adolescent childbearing in the 1970s has led to a better understanding of the conequences of early childbearing. As a group, young mothers receive less adequate prenatal care, but programs which ensured a high level of care have shown that adolescents can have good pregnancy outcomes. The extensive problems associated with early childbearing are far more often social, economic, and psychological rather than physiological. Women under 20 not only bear in more than 500,000 babies each year, but also undergo more than 450,000 abortions. In recent years, the birth rate for all women under 20 has declined, but the rate for the younger teens has been slow to decline. Currently, the rate for very young teens is high relative to past U.S. or international comparisons. Increasingly, teenage births are to unmarried teenagers (69). Research has documented the negative social effects of early childbearing on these mothers and their children.

The health effects of number, timing, and spacing of births are addressed in Chapter 2 of this report; hence, the discussion here will focus on the influences of early childbearing on a woman's social and economic well-being. It is clear that an early first birth has a detrimental effect on a woman's education and subsequent earnings. The teen mother has higher subsequent fertility than does the woman who delays childbearing, and the combined effect of more dependents, fewer individual resources and undependable support from fathers of the children leads to higher welfare dependency for many. While teenage childbearing is a problem that is experienced across society, the rates of teen childbearing are significantly higher among Black women. Presently, 25 percent of Black births are to teenagers, twice the incidence observed in Whites.

There is considerable research evidence on the effects of divorce. This research tends to address the relationship between divorce and subsequent mental or physical health problems, the availability and use of social supports, and reduced economic status. These factors appear to be interrelated, although the exact dimensions are not well understood.

Morbidity and mortality rates for divorced adults tend to be higher than for persons in any other marital status. But differences in mortality between the married and the unmarried are markedly greater for men than for women in all but the oldest age groups (70). In some cases it appears that marriage is more protective of mental health for men than for women. Never-married women have the lowest rates of depression and, when studies control for income, non-married women have better mental health than comparable men (48). The experience of marital disruption does seem to have negative health consequences, particularly for men (70, 71).

It is difficult to measure the effects of divorce independent of economic factors (72). Divorce has been a major determinent of the increase in the number of families headed by females--families which are often in poverty. Despite a small increase in the number of men who obtain custody of minor children, or who share in their care, in most cases the mother is still the person responsible for the children following divorce.

The effects of divorce on economic well-being and social supports are interrelated. When the father is paying child support he is most likely to maintain contact, a contact that appears beneficial to the child and also perhaps to the mother. Absence of willingness or ability to provide support appears to be related to a failure to maintain contact. While the causal relationship of these events is not altogether clear, it is apparent that many mothers are without adequate social or economic support following divorce. Divorce is often disruptive not only to the relationship with the ex-spouse, but also with the extended families and perhaps with friends and other social contacts as well. It is hypothesized that more women may be better able to cope psychologically than men following divorce because women are better able to generate social supports.

Some have argued that women have more social supports than men because of greater affiliative practices. Others believe that women have fewer social supports because of their greater longevity, greater likelihood of being widowed, lower remarriage rates after divorce, greater likelihood of being a single parent responsible for raising children, and generally lower economic status. Because so many studies have found that social bonds and supportive interactions are important to well-being, it is important to explore what constitutes social support and what aspects of these supports are vital to health. The role of social support in health maintenance has been recognized and included as one of the 1990 Objectives for the Nation in disease prevention and health promotion.

Many women now in their forties and fifties had children early in life. With a current life expectancy of 78 years, most of these women can expect to live about 46 years after the last child enters school. Indeed they will live almost half their adult lives after the last child has left home. While the popular literature has coined the phrase "the empty nest syndrome," research does not provide support for the idea that these years are psychologically difficult for women: rates of depression have been found to be higher for women between the ages of 25 and 44 who have children in the home, and lower for women over 44 whose children have left home.

Divorce is, of course, not the only factor in disruption of family and household. The higher mortality rates of men and the discrepancy between ages of husbands and wives mean that many women spend a significant portion of their lives as widows. Only 39 percent of women are married at the age of 65. Of the almost 10,000,000 older women without spouses, approximately 70 percent live alone or with people unrelated to them. Elderly Black women are far more apt than White women to live with children and/or grandchildren. Elderly women who live alone have a higher frequency of health and nutritional problems and less access to supportive services in the home. Not suprisingly, health problems are more frequent among those elderly with low income, and 52 percent of elderly white women and 84 percent of elderly Black women live at or near the poverty line. However, many widowed women do cope well with the loss of a spouse and research shows that widowed men are at greater risk for negative health outcomes than are widowed women (71).

In summary, it appears that the family or household in which one is reared or has lived has important associations for health. These include the location and size of the household, marital staus, the age and timing of births, and the conditions relating to the dissolution of marriage or household. Family and household are important to health both because they help to shape and maintain health practices and because the home continues to be a major place for treating family members when they are ill.

Interactions with the Health Care System

Studies repeatedly have shown that women are more likely than men to report illness symptoms and use health services. What is not clear is whether these statistics reflect real differences in functioning and morbidity or some combination of gender differences in illness behavior, differences in income and age structure, differences in access and barriers to care, and differences in the respective treatment the system provides to men and women (73, 74).

Use of the system. Numerous factors combine to determine how people interact with the health care system. Sex differences in health and illness behavior have been reviewed to assess their effects on health and illness (3, 60, 75-77). Gender role differences interact with other sociodemographic and economic factors to affect health care utilization. Low income and minority status are associated with increased use of services. Chronic illness affects older people more often and older people report more symptoms and use more services. Increased reporting of symptoms and use of services thus is related both to women's disadvantaged economic status and to their increased longevity.

Access to care is influenced by economic status, insurance, geographic location, availability of services, transportation, and child care. Barriers to care include geographic and social distance between client and professional and bureaucratic response to patients. As the male-female gap in longevity and income continues to grow, it can be expected that the gap in men's use of services will continue to widen regardless of the other factors that influence such use. It is, therefore, important to give increased attention to the ways that the structure, delivery, and financing of health care services affect women and women's expectations of the health care system. There is a need to understand how biomedical and social factors interact to influence women's health and illness behavior and the consequences thereof.

Attitudes towards the treatment of women. Differences accorded men and women within the health care system have been examined. Several studies have reported that women are treated with less respect, may be infantalized, and receive poorer medical care (78-81). Nurses were found in two studies to treat male patients with more dignity and respect than female patients (82, 83). Some have argued that male physicians are not understanding of women's needs (84). There is evidence that physicians disproportionately prescribe psychotherapeutic medications for women as discussed in Chapter 4. Such research indicates that women may be more negatively treated by the health care system than men, but at least one study found that women patients often had a more positive impression of their doctors than did men (78). It is important to understand how provider-patient relationships are developed and what impact these relationships have on the behaviors of patients and medical outcomes.

The popular literature, in general, and women's magazines, in particular, have raised questions about the health care system: the way in which services are organized, who delivers health care, the sensitivity of health care providers to women's needs, the need for a research base about such normal female conditions as the menstrual cycle and birth process, and such problems as osteoporosis and breast cancer. In recent years, Public Health Service supported research has become more responsive to these concerns.

Another concern that has been expressed is that medical decision making, research, and service delivery are dominated by men while most patients are women. This ratio is beginning to change. In 1982, only 14.8 percent of the 486,000 physicians practicing in the United States were women. However, the percent of female students in the health professions has increased dramatically; in 1981-82, women comprised 27 percent of medical students, 14 percent of podiatry students, 19 percent of dentistry students, 23 percent of optometry, and 47 percent of pharmacy students. Women still constitute the overwhelming majority of other health providers and currently total 97 percent of practical and registered nurses, 86 percent of health aides and 71 percent of health technicians.

Changing social attitudes toward women and their health have brought about the development of a women's health movement that includes lobbying organizations and caucuses in each of the professional health associations, alternative treatment services for women, and a health movement that stresses self-care and preventive health practices. These activities continue to affect the traditional health system.

Individual responsibility for health care. The increasing interest in alternative forms of health services in the United States that stress individual responsibility, particularly self-care, has been reinforced by recent national, State, and community level efforts to prevent disease and promote healthful lifestyle behavior. The 1990 Objectives for the Nation represent a national effort to improve the health of all Americans. Specific objectives are defined which pertain to the health of women: high blood pressure control, family planning, pregnancy and infant health, immunization, toxic agent control, sexually transmitted disease, occupational safety and health, smoking and health, nutrition, misuse of alcohol and drugs, physical fitness and exercise, and control of stress and violent behavior. Measures to address these priority areas can be individual or community wide. Actions to stop smoking, reduce misuse of alcohol and drugs, improve diet and nutrition, manage stress, exercise, adhere to medical regimens, and appropriately use preventive health services can reduce the risk of illness and premature death.

Individuals and organizations involved in the women's health movement have undertaken a variety of activities in addition to the provision of services, to achieve their goals (85). Several national women's organizations have served as health care advocates, initiating litigation on women's health issues, such as prescription labeling of drugs, "DES daughters," and potentially hazardous contraceptive methods. Further, these organizations have established monthly publications, clearinghouses, and libraries for disseminating information pertinent to women's health. They have also conducted conferences and workshops to discuss current women's health issues.

One of the more significant documents resulting from the growing interest in and awareness of women's health concerns during the early 1970s was "Our Bodies, Our Selves," published by the Boston Women's Health Book Collective. This publication grew out of a group of women sharing their experiences about their interactions with the health care system. Although the group originally met with the intent of developing a list of OB-GYN practitioners in the Boston area, its members discovered that they had similar questions which had not been answered by the medical establishment and had experienced treatment they found to be inadequate or insensitive. A common interest and support emerged from these discussions and other similar events occurring simultaneously throughout the country. The result was a political consciousness on the part of particular groups of women, which placed pressure on the treatment systems to be more responsive to the needs of women.

Even with the extensive health care system available in the United States, self-care is still very prevalent. A recent study of self-care practices in the United States (86) found that 70 percent of the population who reported an illness had solicited health advice from other persons before contacting a doctor, and about 24 percent had utilized some type of non-prescribed home treatment, the most commonly over-the-counter drugs. Such extensive use of self-care practices makes apparent the need for increased health education efforts.

Summary and Conclusions

In summary, more research is needed to understand the reasons for women's greater use of health care services and to find ways to improve the responsiveness of the health care system to women's needs. Methods of reducing the economic, geographic, and cultural barriers to health care require both further research and further action.

By 1990 many demographic and social trends will have had a predictable effect on the status of women in society and, consequently, on their health status and health service needs. It is important to take these trends into account in planning future publically and privately sponsored initiatives to improve women's health.

At the close of the decade, the proportion of the population over age 65 will rise from 11 percent to 16 percent and those under age 25 will decrease from 21 percent to 16 percent. The post-World War II "baby boom generation" will be entering middle age in large numbers.

These demographic changes can be expected to bring about significant changes in social structure and conditions. With the decreasing number of adolescents and young adults, we can expect a decrease in the crime rate, particularly in the rate of violent street crime, and a decrease in teenage unemployment. Because of the disproprotionately large number of midlife people at the peak of their careers, there will be considerable blockage of occupational mobility, but a generally high income level, particularly among two income families. As more women enter into and remain in the labor force, discrepancies between the sexes in earnings may diminish. It is expected that labor market expansion will be greatest in "female" occupations, for example, the number of secretaries, sales clerks, food service workers, and health aides will be likely to increase. In addition, the home will increasingly serve as a place of employment.

The aging of the population will expand the need for health care services, facilities, and workers. As more women enter into and complete professional training as physicians, psychologists, and pharmacists, major changes in the health care system can be expected.

These demographic and social changes will alter the patterns of the health care needs of women. There will be increased need for attention to health problems of midlife and older women, including menopause, osteoporosis, and the various cancers specific to women. The smaller birth cohorts of children and young adults will change the proportion of the demand for health care services for the young.

Fundamental to the achievement of improved health for all women is the recognition that women's lives have changed dramatically in recent years and future changes are likely to be even greater. The three most important social changes affecting women's health at the present time are: (a) the increasing numbers of women living in poverty; (b) the unprecedented entry into the labor force of women, including those with infants and young children; and, (c) the continuing increase in longevity of women. The society as a whole must begin to take these changes into account if programs and policies are not to be outmoded before they are implemented.

The maintenance of health is a social as well as an individual responsibility. Every level of government, the private sector, and individuals themselves must take an active part in creating and sustaining those conditions that promote public health.

The relationship between poverty and ill health cannot be ignored. Similarly, the disproportionate number of women living in poverty calls for major societal attention. Currently many of the women living in poverty are poor primarily because they are the sole support of their children.

In light of these factors, which affect women's health through means both direct and subtle, the subcommittee has reached several conclusions regarding areas for attention. We endorse and fully support Federal legislation aimed at enforcing child support payments awarded by the courts. In addition, we must underscore the importance of efforts by Federal, State and local governments, as well as private citizens, to develop, monitor, and enforce regulations aimed at maintaining a healthy environment in the community, the workplace, and the home.

Many chronic illnesses cannot be prevented, but they often can be treated so as to minimize their effects. The greater longevity of women contributes to their greater risk for chronic diseases. This issue should be a priority for the Public Health Service with regard to both research and service activities.

Women should increase efforts to become aware of environmental and behavioral risk factors as well as those that promote health and prevent illness. To this end, women should seek out opportunities to participate in the personal and political processes that bear a relationship to their health. Access to health services continues to be a problem for certain populations, particularly poor and geographically isolated women. Outreach efforts should be targeted to these women in order to increase their access to available health care.

Training curricula for service providers, particularly physicians, administrators, and policy makers should be reviewed for their content of, and sensitivity to, issues related to the health needs of women and modified on the basis of problems identified. Particular attention should be paid to training in the areas associated with the provision of services to the population of aging women.

Despite recent advances women are still underrepresented in key decision making positions in the health professions. Barriers preventing women from becoming managers, consultants, planners, and providers of health administration, education, service delivery, and research should be eliminated.

Organizations interested in women's health and well-being should: (a) make deliberate efforts to be informed on legislative, policy and service issues that affect women's health, (b) promote information exchange and public education on health matters, and (c) be advocates for organizational and public policy change needed to improve and promote health conditions for women.

It is important to identify opportunities to further the objectives of health education and health promotion. To this end, a network of professional and lay persons including government and nongovernment representatives should be developed to review information on the social factors that affect women's health. These issues can form the framework for additional efforts with a work group of key individuals in the television, film, publishing, and advertising fields to disseminate health information relevant to women. Further, such a work group can also examine and evaluate the effects of media images on health and, where necessary, change those images. Health education and promotion materials, including curricula for health professionals and the public, should be developed to disseminate research information on prevention. These materials should emphasize the importance of maintaining a healthful lifestyle through education about risk factors, the development of behavioral interventions, and identification of the basic and necessary preventive health services appropriate to women of all ethnic, racial and age groups.

Many methodological and data issues limit our understanding of women's health needs, status, and services available to them. Longitudinal research should be initiated to assess how behavior and social factors interacting with biological factors affect women's health over the life course. Existing data sources should be reviewed for their ability to provide information that is sex and age specific by race and ethnicity, and new studies planned should, whenever feasible, oversample Blacks, Hispanics, Asians, and American Indians to provide sufficient numbers for analysis. Additional age categories should be added to data collection efforts for the older age groups. Current data may have limited usefulness when all those over age 65 are grouped together. In addition, analyses of data collected in State and Federally supported surveys should present the demographic characteristics of the population in tables showing age, sex and race across income groups to enhance utilization of the data by policy makers.

Research is needed as to how the links between poverty, poor housing, nutrition, inadequate access to preventive care, and treatment may differ by gender. The rapid increase in labor force participation of large numbers of women points to the need for research in many areas of women's employment. Health hazards in the work environment should be studied with the aim of reducing the hazards rather than prohibiting the employment of women in these occupations. Of particular need are studies of women related to the health effects of being in occupations traditionally reserved for men, such as blue collar work and management positions. Research should be expanded on health conditions in occupations that are predominantly female such as clerical workers and nurses. The home should be included as a worksite in which research is conducted.

Research efforts should be expanded on how cultural expectations and practices affect the development and maintenance of beliefs, values, and practices that have consequences for health throughout the life course. Included in this area are studies designed to elucidate those cultural conditions and socialization practices that affect self-concept and sex typed behaviors relating to diet, exercise, and other health and mental health related behaviors. In this regard the importance of studies which can enhance our ability to understand and prevent violence, including family violence and sexual assualt, should not be overlooked.

Finally, to understand gender-related differences in health status and utilization of services, it is important to examine how women, vis-a-vis men, perceive and respond to health symptoms and chronic illnesses on a daily basis. It is increasingly important for us to examine the development, maintenance, and modification of women's health attitudes and behaviors through appropriate research initiatives. Combined survey and observational studies are needed to investigate the relationship and interactions between women and various kinds of health care practitioners and institutions as these affect gender-related health and well-being.

These activities suggested by these observations and conclusions are applicable to the Public Health Service, as well as other agencies of the Federal government, State and local governments, the academic and research communities, and all manner of public and private enterprise concerned with the health of women.

Commissioned Paper

Arranging for Child Care: Implications for the Wellbeing of Employed Mothers and Their Children

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The authors wish to thank Wendy Baldwin, Chief, and Virginia Crain of the Demographic and Behavioral Sciences Branch of the National Institute of Child Health and Human Development for making available much of the data presented in this paper.

Arranging for Child Care: Implications for the Well-Being of Employed Mothers and Their Children

Introduction

> Economists have paid considerable attention to the job-search process but have neglected the child-care search process which is an integral part of the job search for mothers with young children (1).

The employed mothers' need for adequate and affordable child care has implications that extend well beyond the economic sphere. There is evidence from national data that the search for child care in the United States is frequently difficult. Further, there are indications that even employed mothers who have the optimal set of choices regarding child care often experience a sense of uncertainty, conflict, and discomfort after they have made arrangements for substitute care. The child-care search has ramifications, not just for mothers' employment possibilities, but also for their own well-being and that of their children.

In this paper we will: (a) present an overview of child care arrangements made in the United States for preschool children, (b) summarize the evidence of difficulty in making such arrangements, (c) indicate that problems in arranging for child care extend to school-age children as well as preschoolers, (d) present data from a recent study of middle class mothers' subjective experience of leaving their infants in substitute care, and finally, (e) consider the implications of these findings for the well-being of employed mothers and their children.

Overview of child care arrangements made for preschool children in the United States. The labor force participation of women with preschool-age children has steadily increased in recent years. In June 1982, 48 percent of women 18 to 44 years of age with children under 5 were employed, compared with 41 percent only five years earlier (2).

While the nationally representative Current Population Surveys from June, 1977 and June, 1982, show a continuing trend toward the employment of mothers of preschool children, the picture for child care arrangements made for these children has been quite stable over this period. A consistent finding for both years is that most care given to preschool-age children of employed mothers is informally arranged and home based.

In 1982, center-based group care was reported to be the principal type of child care used by only 15 percent of employed mothers, 18 to 44 years old, for their youngest child under 5, a slight increase from 13 percent in 1977. In 1982, 31 percent of these employed mothers reported that their youngest child under 5 was cared for in the child's own home (compared with 32 percent in 1977), and in 1982 as in 1977, 40 percent of the mothers reported care in another home as the principal form of care. In 1982, a surprisingly high proportion of mothers, 9 percent, reported caring for their preschool children while employed, compared to 11 percent in 1977. If center-based group care was reportedly by a small percentage of mothers in 1982, the much discussed "on-site day care center" was reported by an even smaller group. Only 0.7 percent indicated that they used a center at their work place.

Relatives were listed as an important source of child care in both study years. In 1982, 14 percent of employed mothers reported that fathers were the principal caregiver; 11 percent listed another relative of the child's home; and 18 percent utilized a relative in a home other than the child's. The parallel figures in 1977 were 14 percent (father as principal caregiver), 12 percent (other relative in child's home), and 18 percent (other relative in home other than child's). Thus, by far the most frequent form of care in recent years has been, and remains, care in the child's or another's home, and the father, or another relative of the child, is frequently the principal caregiver.

One of the striking implications of this child care profile is that we know the most about some of the least used forms of child care (3). Research into the effects of substitute care on young children has focused largely on center-based day care, and only more recently expanded to include family day care (i.e. home-based group care). A further bias in the research on center-based day care is that it has disproportionately assessed the effects of university-based model programs (4). Almost nothing is known about the nature of care provided by fathers and other relatives. Clearly, there is a need for the demographic data to direct research priorities.

Indications of difficulty in arranging for child care for preschoolers. The predominance of informal care, with fathers and other relatives as a high proportion of the caregivers, carries the important advantages of familiarity of caregiver and/or hominess of setting. However, there are a number of reasons to question the assumption that informal, home-based care is invariably optimal.

In discussing the Current Population Survey findings, for example, O'Connell and Rogers (2) observed that the fathers reported to be the principal caregiver, 24 percent were unemployed and looking for work. When only women employed full time were considered, 34 percent of the fathers serving as principal caregivers for their preschool children were unemployed and seeking employment. "The fact that such a large percentage of fathers were actively looking for work implies that paternal child care services, although important, can at best be considered only a transitory type of arrangement" (2).

Presser and Cain (5) estimate that in 1980, one-tenth of full-time dural-earner couples from nonfarm households and with children "had no hours of overlap whatsoever in their hours of employment" and an additional 6 percent had only one or two hours of overlap. Thus, shift-work, with mothers and fathers dovetailing schedules, is also likely to be involved when the father is the primary caregiver. Presser and Cain observe that little is known about the quality of care in shift-work households, or about the effects of shift work on the marital relationship, or on the individual parent. Anecdotal reports raise the possibility of substantial stress to both parents under these circumstances and open questions about the nature of child care given by either parent:

> To decrease the expenses for child care, I work a p.m. shift and my husband works a day shift. I drop the children off at 2:30 p.m. and he picks them up at 5:30 p.m. I am half asleep when he leaves before 7:00 a.m. and he is asleep when I return a little past midnight. This is a terrible way to live, but we cannot afford to spend $400 per month for child care (6).

The predominance of informal arrangements also indicates that the majority of preschool children are cared for in unlicensed, unsupervised settings. Ruopp and Travers (7) estimate that including both day-care centers and family day-care homes, only 17 percent of out-of-home care for children in care 10 or more hours a week, is licensed. While licensing cannot ensure the provision of quality care (and there is evidence of a substantial range in quality among licensed day care centers), it can regulate the number of children in a group, the safety features of a care environment, and provide some system of accountability. While licensed caregivers tend to view themselves as educators, unlicensed caregivers are more likely to see themselves as babysitters and to have no specialized training in child care. There is a good evidence that training relevant to child care is an important predictor of the child's daily experiences and development in substitute care environment (8).

The pool of potential caregivers, both relatives and nonrelatives, available for informal, home-based care, has been diminishing. While home-based care was stable between 1977 and 1982, comparison data from 1965 (9) indicates a substantial decline from the 1960s to the 1970s in care provided in the child's own home. Care by both relatives and nonrelatives in the child's own home had declined in this period, but the decrease in care by nonrelatives was particularly large. "The 'next-door neighbor' of the 1950s who may have been available for child care services is very likely to be out working herself in the 1980s" (9).

Hofferth (10) observes that relatives who might care for preschoolers are now less likely to live in multigenerational households or in proximity and are themselves also more likely to be employed.

A number of problems face the employed mother in arranging for child care for her preschool-age children. The pool of relatives and nonrelatives available to provide home-based care appears to be diminishing; concerns about cost appear to be an important factor constraining choice of child care arrangements made; multiple arrangements are necessary for a substantial minority of employed mothers; and caregiver arrangements, perhaps because they are so often informal in nature, appear to come undone with some frequency. Seemingly optimal arrangements, like care by the father in the mother's absence, can occur under circumstances like paternal unemployment or shift work that involve stress for both parents. The difficulty in finding affordable care for preschoolers is clearly reflected in the report that approximately one in four mothers who are not currently in the labor force report that they would be looking for work if child care were available at reasonable cost.

Child care arrangements for school-age children. In 1984, 65 percent of married women from intact families with children between 6 and 17 years old were in the labor force (11). The assumption is often made that once children enter school there is no longer a need to arrange for substitute care. In fact school hours do not account for all the hours a mother employed full time must be away, and the supervision of school-age children after school, during school vacations, and when ill is a major issue for employed mothers. Few organized programs exist for after-school care, and there has been much discussion of the need to expand the child care options for school-age children (12, 13). At present, the lack of child care is estimated to be most acute for school-age children and infants (14).

There is little reliable data at the national level about school-age children in self-care after school hours. The Current Population Survey, working with the Census Bureau, is now attempting to address this issue. Existing approximations of the number of children in self-care vary substantially, but all place the number in the millions:

> ...it has been estimated that two to five million children 6 to 13 years of age and 8 to 10 million children younger than 18 can be regarded as latchkey children (12a).

There is evidence that self-care raises serious concerns for both parents and children. While some self-care may be seen as providing opportunities for self-reliance and the assumption of responsibility by children, it has been argued that frequent self-care amounts to premature independence and puts the child in a position of "feeling neglected, in danger, or isolated" (12b).

Long and Long (15) studied 53 latchkey children and 32 control children in a black parochial school. They found that one-third of the latchkey children remained in self-care even when they were sick, that the latchkey children were more likely to be highly fearful, to have nightmares and to watch more hours of television on a daily basis than supervised children. In a recent Senate testimony, T. J. Long (16) reported that former latchkey children interviewed as adults often felt that this experience had had long-lasting effects, "including fears that continued into adulthood and and a sense of social ineptitude that resulted from having fewer opportunities for social interaction as children."

There are also concerns about the physical safety of children in self-care and about their ability to handle emergencies (12). Long and Long (15) found latchkey children to be insufficiently prepared to handle emergencies while home alone.

Concerns about substitute care expressed by employed mothers. Up to this point we have presented evidence of difficulties that employed mothers face when they need to arrange for child care for their preschool-age and school-age children. How do employed mothers feel about their child care arrangements once they are made? Do they generally feel comfortable and unconflicted or do they have ongoing concerns?

Mothers' satisfaction with substitute care is another issue of importance that has not, as yet, been addressed in quantitative data at a national level. We do not know, for example, whether employed mothers are in fact more satisfied with informal than with center-based care arrangements or what proportion of mothers have serious questions about the quality of their child care arrangements. Evidence from smaller-scale investigations indicates, however, that for many employed mothers' concerns about child care persist. One such survey summarized mothers' concerns about sutstitute care as follows:

> When asked if they are 'satisfied' with their child care arrangements, most working mothers reply that they are. More probing question, however, frequently turn up serious problems, complaints, and anxieties. Some mothers are concerned about abuse and neglect of their children especially by babysitters or day care homes....There are many complaints about the high cost of day care, about the difficulty of making satisfactory arrangements for children under three years old, about the problem of transporting children to distant locations for care...about the inflexible hours of day care centers and homes and the refusal of many of of them to take care of even mildly ill children (17).

Research in progress at the Child and Family Research Section, Laboratory of Comparative Ethology of the National Institute of Child Health and Human Development, has attempted to assess the concerns of employed mothers about the substitute care they had arranged for their first-born infants in the first year of life. In the context of the study, interviews were carried out with 70 employed mothers focusing on their subjective sense of comfort with their care arrangements. It should be noted that this was a middle-class sample of married, well-educated women, many of whom had deferred the birth of their first child until their late twenties or early thirties. As such, this group of women can be presumed to have had a relatively optimal set of choices in seeking child care. Nevertheless, substantial numbers indicated uncertainty and discomfort about leaving their babies in substitute care. The responses of the mothers pertain to all the different arrangements they made for care and not just for employment, but it can be seen that leaving a baby in the care of another is an ongoing issue for these mothers.

In this middle-class sample, a fairly high proportion of mothers reported feelings of discomfort upon leaving their babies and uncertainty about the issue of separations and substitute care. It is to be hoped that future work will address the ongoing concerns regarding substitute care of mothers of older children, and of mothers in less optimal socio-economic circumstances. Our work suggests that completing the logistics of arranging for child care does not signify the end of concerns about child care.

Implications. Maternal employment is a necessity rather than a matter of choice when two incomes are required for families to remain above the poverty line or move into the middle class, and as increasing numbers of women head single parent households. It is the employed mother who most often shoulders the responsibility for finding and maintaining child care. It is usually she who feels the sense of responsibility when her child returns from school to an empty apartment or house.

Is there any evidence that difficulty in making substitute care arrangements or concerns about the quality of care have implications for the wellbeing of mothers or children? The one aspect of this issue that has been extensively assessed in research is that of the implications of low quality day care for children's development (8, 18). Specific aspects of day care environments are predictive of child outcomes. Thus for example, McCartney et. al. (19) found that even when children attended day care centers with good facilities, if rates of adult-child verbal interaction were low, the children were reported by their caregivers to be more anxious, hyperactive, and aggressive. We have already summarized evidence that other aspects of child care, for example a frequent change in caregivers, have implications for children's development.

To our knowledge, there is only a single study attempting to document the implications for mothers of concerns about substitute care. Harrell and Ridley (20) found that a mother's satisfaction with her child's substitute care was positively and significantly related with her work satisfaction. Forty-five percent of the employed mothers in this study reported that "they worried less about leaving their children when they were satisfied with their substitute child care" (20).

The findings give a number of indications that locating and maintaining child care can be a source of stress. Stress may occur, for example, when:

- a mother experiences anxiety about precarious multiple arrangements, or the transport of her child between daily care settings;
- a mother and her husband doing shift work are exhausted by a double employment and child care load;
- a mother repeatedly finds her child crying or apathetic and listless when picking him or her up after work;
- a mother must settle for a care arrangement she feels is not optimal because there are no other options or she cannot afford better care;
- a mother knows that at 3:30 her child has returned home to an empty house;
- a substitute caregiver is ill and the mother cannot miss work;
- a child is ill and the day care center will not permit even a mildly ill child to be present; and
- a mother feels ongoing uncertainty about leaving her child at all, given other conflicting messages of our culture (that employment is respected and confers status, but that a mother should be at home with her children).

Summary and Conclusion

As noted in the opening quotation, the implications for women in providing good child care have not been the subject of adequate research. However, evidence exists indicating that (1) child care is often difficult to find and that mothers frequently have ongoing concerns about child care; (2) that satisfaction with substitute care is related to job satisfaction; and (3) that job stress surrounding child care is a factor in women's psychological and physical well-being. It is recommended that this neglected aspect of employed women's experiences will receive more attention in future research.

Chapter Two

Women's Physical Health and Well-Being

Introduction

Most health problems affect individuals without regard to sex. When sex differences in disease incidence do occur, it is usually the male who is adversely affected. However, despite this fact, and the fact that life expectancy for women is significantly longer, reported morbidity rates are higher among women, and their are a number of health conditions that are either unique to women, significantly more prevalent or serious in women, or require special strategies for prevention and intervention in women. This chapter addresses those conditions.

In a number of areas, women's health and well-being have markedly improved in recent years due, in large part, to efforts of the Public Health Service (PHS).

- Much progress has been made in the diagnosis and treatment of breast cancer and in breast reconstruction after surgery.

- The problem of infertility is yielding to advances in diagnosis and treatment. These advances include hormonal treatments to induce ovalation or spermatogenesis, microsurgical techniques to reopen blocked oviducts, and in vitro fertilization.

- The use of increasingly sophisticated antenatal diagnostic techniques, coupled with the development of a range of contraceptive agents, enables women to exercise greater control over their reproductive functions.

- A dramatic decrease has been effected in maternal mortality associated with childbearing and in infant mortality and morbidity.

- Maternal mortality has declined due to better management of medical problems such as hypertension and diabetes in pregnancy, better control of bleeding and infection after delivery, and marked reduction in the complications of early termination of pregnancy.

- Infant mortality has declined in association with improved medical monitoring of pregnancy, labor, and delivery; improved management of conditions in the mother that are life-threatening to her baby; markedly improved technology, medication, and nutritional support for the newborn infant, especially the premature infant; and specific treatment advances such as use of RH immune globulin (Rhogam) which safeguards future infants of Rh negative women.

- Advances have been made in the understanding, prevention, and treatment of osteoporosis, a chronic disease of older people, particularly women.

The disorders of women to be highlighted in this chapter relate directly to the Department of Health and Human Services (DHHS) health goals for 1990 as delineated in the 1979 Surgeon General's Report on Health Promotion and Disease Prevention, entitled "Healthy People." Without necessarily implying priorities, the problems to be addressed here will speak to the nature and extent of any given condition; its importance as a health issue for women; PHS activities in these areas; what further efforts are needed in terms of research and service programs of the PHS; what other governmental agencies and private organizations can do; and what women can do for themselves.

Cancer in Women

Cancer is the second most common cause of death in American women in general and the leading cause of death among women aged 35-54. The largest number of cancer deaths in women have resulted from breast cancer, followed by cancer of the lung, colon and rectum, ovary, and uterus. At present, cancer of the lung is rapidly overtaking cancer of the breast as the leading cause of cancer death in women (1).

Breast cancer. One in 11 women develops cancer of the breast at some time during her lifespan, and an estimated 37,000 American women will die (Val, or died) from it in 1984. The mortality rate for breast cancer has remained stable over time: in 1969, the rate was 26.4 per 100,000 women; in 1980, it was 26.0.

New approaches to the treatment of breast cancer and advanced techniques in breast reconstruction have made the consequences of therapy less disfiguring than heretofore. Primary treatment with radiation therapy is a promising technique for women who have early-stage breast cancer. In such treatment, only the lesion, a surrounding margin of breast tissue, and underarm lymph nodes are removed before radiation treatment begins. Clinical trials conducted by the National Cancer Institute (NCI) are now comparing radiation therapy's effectiveness with traditional surgical approaches, and preliminary results are encouraging.

Two other recent NCI projects are improving the outlook for women with breast cancer. One clinical trial has shown that there is a longer disease-free interval and improved survival rate for women receiving chemotherapy following mastectomy. The development of side effects was reduced when it was demonstrated that a 6-month chemotherapeutic regimen gave the same benefits formerly expected from treatment for a year.

The other project concerns development of monoclonal antibodies as a tool to diagnose several forms of human breast cancer. The use of these antibodies may provide a sensitive system for detecting very early disease, thus permitting treatment when only a relatively few cancer cells are present. The radioactively labelled antibodies can also successfully detect cancer cells in lymph nodes removed at mastectomy. Although this technique is still in the experimental stage, it should lead to better differential diagnoses of the various types of breast cancer, and to improved selection of the best course of treatment (2).

Lung cancer. It is now estimated that lung cancer will surpass breast cancer as the leading cause of cancer deaths in U.S. women by the mid-1980's. Lung cancer deaths in women have risen 600 percent in the past 30 years, an increase that is probably attibutable to increased cigarette smoking by women. As a prevention effort, NCI and the Office on Smoking and Health are supporting a project to identify strategies to discourage teenage women from starting to smoke (1).

Endometrial cancer. Endometrial (uterine corpus) cancer is the third most common cause in women in the U.S. It is the fifth highest cause of cancer death and comprises about 9 percent of all cancers in women. It is easily detected and the 5-year survival rate is 87 percent for Whites and 54 percent for Blacks. It is probable that this differential mortality is due to later detection of the disease in Black women. The most common sign of endometrial cancer is unexpected bleeding. It is assumed that diet and life style contribute to the disease. A recent study by the Centers for Disease Control (CDC) found that the use of birth control pills by women reduced the risk of endometrial cancer (3).

Ovarian cancer. Ovarian cancer is the fourth most common cause of cancer death in American women. Some 18,000 women developed the malignancy and more than 11,000 died from it in 1983. Ovarian cancer has a 5-year survival rate of 34 percent for White and 35 percent for Black women.

Research conducted by the NCI demonstrates that women who have been pregnant are half as likely to develop ovarian cancer than nulli-parious women; multiparity protects them even more. Use of birth control pills, which create a hormonal balance similar to that found in pregnancy, reduced the risk of ovarian cancer by 10 to 50 percent. There appears to be some relationship between the development of breast and ovarian cancer. Women who have had breast cancer have twice the expected risk of developing ovarian cancer. Similarly, women who have ovarian cancer are three to four times more likely to develop breast cancer. Emphasis must be placed on research in this area (4).

Cervical cancer. Cervical cancer has been, and continues to be, studied extensively but no primary cause has yet been found. NCI is now conducting a case control study of 2,000 women across the Nation to improve knowledge and understanding of the causes of cervical cancer. In 1973, the 5-year survival rate for women diagnosed as having cervical cancer was 66 percent for Whites and 61 percent for Blacks. Its incidence and mortality in the U.S. have been declining for the past three decades in both Black and White women. However, cervical cancer in Black women still occurs more than twice as often as in White women, and the mortality rate in Blacks likewise is more than twice as high as that of White women.

Two major risk factors for cervical cancer are multiple sex partners and early age at first intercourse. Frequency of intercourse with one partner does not appear to influence risk. Neither does the circumcision status of the man. Fortunately, early detection of cervical cancer is readily available with a "Pap smear" (5).

For cancer of the breast, lung, and other sites, NCI sponsors projects on detection, diagnosis, treatment, rehabilitation, and prevention. Studies are underway that are examining both familial and environmental factors, as most cancers are thought to be caused by some combination of the two.

Among the environmental factors known to increase the risk of developing cancer are radiation, cigarette smoking, alcohol consumption, and other dietary habits, as well as the use of high doses of drugs such as estrogens, or exposure to diethylstilbestrol during pregnancy. Estrogen, used to prevent or arrest osteoporosis in postmenopausal women, may be associated with a slightly increased risk of endometrial cancer. A National Institutes of Health (NIH) panel of experts recently discussed the pros and cons of estrogen replacement therapy for those at risk of osteoporosis and concluded that, in general, the consequences of osteoporosis are far more serious than the risks of endometrial cancer. Most studies do not link estrogen to increased risk of breast cancer although caution is still needed in this regard.

Since exposure to man environmental carcinogens is avoidable, NCI launched a major public education program in 1984 to make the public and health professionals aware of steps they can take to prevent cancer. Most important are breast self-examination, regular pelvic examination, and regular "Pap smears." In addition to research to identify the causes and more effective treatments for cancer, efforts are needed to improve early detection and make the best treatments available to the entire population to overcome the unfortunate differential in cancer mortality between Black and White women (6).

Reproduction

Regulating reproductive functions. Women today have far more control over the timing of childbearing than at any other time in history. The freedom brought about by the wide range of effective contraceptives has enabled women to pursue education and careers without interruption, and to start families when they choose.

In the United States today, 29,000,000 women use some form of contraception. However, because no contraceptive is totally effective, convenient, reversible, and without side effects, the National Institute of Child Health and Human Development (NICHD) evaluates the safety and efficacy of all contraceptives, including "the pill," interuterine devices, spermicides, barrier devices (the diaphragm, sponge, and cervical cap), and sterilization. NICHD also supports the world's largest research effort to develop new contraceptives for both women and men. While these studies are particularly important in regard to women's health. They include investigations into brain hormones that control ovalation and spermatogenesis, biodegradable implants of contraceptive hormones, and disposable diaphragms.

Oral contraceptives, the most widely used form of reversible birth control, have been studied intensively. The results of this research have helped to define the groups of women using the pill who are most likely to have a serious pill complication, such as heart attack or stroke. These groups include women in their mid-thirties or older who are heavy smokers, and those with any other risk factors for cardiovascular disease, such as obesity or hypertension or both. The oral contraceptives most widely used during the sixties through the mid-seventies increase the risk for women of developing a liver tumor called hepatocellular adenoma. The actual number of women affected was very small. Since the increased risk was directly related to dosage, the current pill is believed to be associated with even less risk. Ancillary benefits of pill use such as protection from pelvic inflammatory diseases and from endometrial and ovarian cancer have also been described. Work is underway to explore what effects, if any, the use of the pill has on the development or prevention of osteoporosis (7).

Disorders of the Reproductive Tract. Symptoms related to the reproductive tract account for over 30,000,000 visits to physicians by women each year. These symptoms vary from discomfort to those related to serious disease. Thus, pelvic inflammatory disease can lead to infertility, ectopic pregnancy, and sometimes death. Menstrual disorders may cause discomfort, lost time from work, and disrupted schedules.

Despite ever increasing knowledge about the female reproductive system, many questions remain to be answered about both normal and abnormal processes.

Women who contract sexually transmitted disease (STDs) are more adversely affected both in the short and long term than are men. For example, a woman generally develops a more severe case of genital herpes initially, and women having genital herpes run a fourfold greater risk of cervical cancer than women who have not contracted herpes. Between 10 and 20 percent of women who contract gonorrhea develop pelvic inflammatory disease, and 15 to 20 percent of these women become infertile due to scarring and subsequent blocking of the fallopian tubes. In the United States, four to five percent of the sexually active women carry Chlamydia trachomatis organisms in the cervix. Pregnant women with herpes or chlamydial infections or other STDs incur the additional risk of passing the disease on to their offspring.

Research sponsored by the National Institute of Allergy and Infectious Diseases (NIAID) includes efforts to understand the basic nature of STDs, and work to develop new techniques for diagnosis and treatment. In the area of prevention, promising results have come from the attempts to develop vaccines against herpes and cytomegalovirus. Research funded by the NICHD has demonstrated that oral contraceptives and barrier devices apparently provide protection against the contraction of STDs, and current studies are evaluating the protective effects of spermicides. Other NICHD research seeks to define the effects on the fetus of certain STDs during pregnancy.

Toxic shock syndrome (TSS) affects between 3 and 14 out of every 100,000 menstruating women each year, although its incidence seems to be decreasing. Preventive measures were taken by the Food and Drug Administration (FDA) in 1982, when tampon manufacturers were required to alert women about TSS through the labelling of tampon boxes. Consumer interest in TSS remains high, and research continues at the CDC into the causes of TSS.

Because knowledge of the hormonal control of the female reproductive system has grown rapidly in recent years, physicians can now characterize menstrual abnormalities with increasing specificity. Still, the underlying mechanisms for some disturbances in ovarian function remain unclear.

Among the ovarian disorders warranting further study are polycystic ovarian disease, premature ovarian failure, and menstrual abnormalities related to environmental stress or physical exercise. The NICHD recently has expanded efforts to solicit research in each of these areas as well as in other disorders of the reproductive tract such as endometriosis and ectopic pregnancy.

Disorders of the female reproductive system account for between 40 and 70 percent of cases of infertility. Infertility is now a problem for about 15 percent of American couples. Blockage of the fallopian tubes as a result of infections, hormonal or ovalation disorders, and endometriosis are three major causes of infertility in women.

Technical improvements in microsurgery to unblock impassable fallopian tubes and in *in vitro* fertilization to bypass blocked tubes altogether continue to be made. A greater understanding of the action of luteinizing hormone-releasing hormone holds promise for the development of treatment modalities for more precise control in inducing ovalation, thus avoiding the multiple births that often accompany the use of currently available fertility drugs, such as Pergonal.

Extensive study is needed and is, indeed, being supported by the NICHD on the biologic bases for infertility in women through increased emphasis on the biochemical, endocrinological, cellular, and molecular approaches to the understanding of normal and abnormal reproductive function in women (8).

Menstruation

Disorders frequently associated with menstruation at the one end of the spectrum are amenorrhea, dysmenorrhea, premenstrual problems, and iron-deficiency anemia. At the far end of the reproductive cycle are the consequences of menopause.

Primary amenorrhea, the absence of onset of menstruation in women by age 18, may be due to anatomic anomalies, ovarian dysfunction, or chromosomal abnormalities--including Turner's syndrome. Secondary amenorrhea, the cessation of menstruation in a woman who has pre- viously had her menarche, may be the result of hormonal abnormalities, including hypo- or hyperthyroidism and hypothalamic-pituitary disorders. Crash diets, obesity, excessive exercise, anorexia nervosa, emotional stress, drugs, and serious illness may prevent or delay normal menstruation.

Painful menstruation (dysmenorrhea) is primarily caused by severe uterine contractions. Accomopanying symptoms may include headache, backache, diarrhea, and nausea. Prostaglandins have been identified as a major contributor to the intensity of uterine spasms. Drugs that prevent natural prostaglandin production early in the menstrual period have been found to be effective in relieving symptoms in 75 percent of affected women. The reasons that dysmenorrhea diminishes in many women after a full-term pregnancy have never been satisfactorily explained.

Whereas dysmenorrhea is more frequently reported by women in their teens and early twenties, premenstrual problems are more often reported by women in their late twenties and older. It has been estimated that 4 out of 5 women experience some premenstrual problems. Behavioral symptoms range from expressions of depression, aggression, irritability, and anxiety to mood swings and food cravings. Physical symptoms include fluid retention (swollen ankles, abdomen, and breasts), headache, acne, fatigue, and exhaustion. Some have called the constellation of pronounced premenstrual symptoms the premenstrual syndrome (PMS).

As discussed in the commissioned paper, "Premenstrual Syndrome," the causes of premenstrual problems remain elusive. Hormonal imbalance, nutritional or chemical deficiencies, and neurobiological causes have been suggested. NIH and the National Institute of Mental Health (NIMH) support research to identify biological markers of the disorder and to document the relationship that may exist between phases of the menstrual cycle and mood and behavioral disorders. The complex interrelationships of hypothalamic, pituitary, and ovarian function are also being examined.

Current therapy for premenstrual symptoms include medications such as diuretics, muscle relaxants, and analgesics; special diets; group therapy; and behavior modification programs. Behavior modification is particularly useful when a change in diet or any other health habit is desired. None has been proven effective in clinical trials.

Iron-deficiency anemia is seen in some women with especially heavy menstrual flow, particularly those whose diets contain inadequate iron, and in menstruating adolescent girls during growth spurts. Usually dietary adjustment and iron supplements usually completely reverse this type of anemia.

A 1981 survey showed that only 1 in 3 people believe that it is appropriate to talk about menstruation in an office or social setting. The study found that a large minority of the women (31 percent of those questioned) did not know what was happening to them the first time they menstruated. However, a relaxation of attitude and better health education during the last two decades appear to have improved women's knowledge of menstruation. The proportion of women who did not know about menstruation before its onset was 39 percent among those over age 35, compared to only 19 percent among those younger than 35 (9).

Menopause. After 20 percent of menopausal women have some physical symptoms severe enough to seek medical attention, such as hot flashes or vaginal dryness. The common assumption that depressive disorders are more likely to occur in menopausal women has not been borne out. Disturbing emotional symptoms may occur but the incidence of depressive disorders has, in fact, been shown to be higher in younger age groups than in postmenopausal women.

Hysterectomy is one of the most common surgical procedures in the United States. In 1981, 673,000 women underwent a hysterectomy, according to the National Center for Health Statistics (NCHS). The procedure is recommended when serious malignancy, excessive growth of fibroids, or severe hemorrhage fails to respond to conventional treatment. When major surgery such as hysterectomy is recommended, many women seek a second opinion. To a woman in her thirties or forties, the sudden onset of menopause following bilateral ovariectomy may heighten her distress about the loss of reproductive function. The support of close relatives and friends is essential during that time. Many women find psychological counseling before and after hysterectomy useful.

Estrogen replacement therapy (ERT) is often prescribed for hot flashes, vaginal dryness, and vaginal infection when related to a change in the production of estrogen and progesterone, e.g., natural menopause of post-surgical menopause after bilateral ovariectomy. However, it is difficult to give estrogens in physiologic amounts and slight excesses of estrogens have been reported to cause such side effects as swollen breasts, nausea, vaginal discharge, headache, fluid retention, and weight gain in some women. In addition, ERT is associated with slightly increased risk of endometrial cancer and appears to lose it effectiveness with respect to osteoporosis over time. More recent findings indicate, however, that progestins, taken in the proper dosage and at 2- to 3-month intervals, may offset even the small carcinogenic risks of ERT.

It has been suggested that ERT may extend the protection natural estrogen gives women against heart disease before competion of menopause, but the findings there, too, are inconclusive. Whether or not a woman with postmenopausal symptoms should take estrogen, and in what form, is a question that requires an individual assessment in each case (10).

Childbearing--Early and Late

Two extremes in fertility patterns present potential health problems for women: adolescent childbearing and delayed childbearing past age 30. While birth rates to adolescents have been declining, the proportion of first births to women over 30 has risen sharply. The determinants of adolescent and delayed childbearing and the consequences of each have been examined in studies supported by the NICHD.

Despite the decline in birth rate, women under 20 still have more than 500,000 births each year. Studies on early childbearing have been directed toward understanding its effects on woman, her child, the father, other family members, and society as a whole. Physically, pregnancy in very young teenagers is risky form for both mother and child. Socioeconomically, the adolescent mother is generally disadvantaged for her lifetime in terms of curtailed education and lack of qualifications for better paying occupations. She is, consequently, consigned to low income status and her child's health and intellectual development suffer accordingly. These effects extend to other family members who often try to provide support, and to society which funds public assistance programs.

The seriousness of these consequences leaves no doubt as to the benefit of programs to prevent adolescent pregnancy. Several projects of the NICHD and the Office of Adolescent Pregnancy Programs are involved in delineating adolescent sexual behavior and the individual, couple, familial, and societal factors that influence it. These studies should provide better understanding of the determinants of adolescent pregancy on which prevention programs can be based.

In the older age groups, the availability of contraception and the desire by women for advanced and active careers have more than doubled the proportion of women having their first child after age 30, from 3.9 percent of all first births in 1970 to 9.5 percent in 1981. From a socioeconomic standpoint, these women benefit by delaying childbirth, as they tend to be more educated and to have higher status jobs and better incomes. From a medical standpoint, however, older women may have increased chances of infertility or of complications of pregnancy. More research is needed to evaluate better the risks and benefits of delaying childbearing until after age 30, so as to provide guidance for couples as they make decisions concerning the timing and spacing of the births of children (11).

Pregnancy. Dramatic improvements have been made in the health of mother and child in the past two decades, due in large measure to better service delivery programs supported by ageincies of the PHS and to advances in prenatal and perinatal care based on findings from biomedical and behavioral research. The maternal death rate from pregnancy and childbirth in the U.S. has dropped from 36.9 per 100,000 live births in 1961 to 7.7 in 1981, or from 1,573 deaths to 280. During that same period, infant mortality dropped from 256.3 per 1,000 live births to 11.7.

In December 1980, the first Surgeon General's Workshop on Maternal and Infant Health brought together 72 professionals in the field of health and social services, economic experts, consumer representatives, and government officials. At the conclusion of the workshop, they presented a series of recommendations which outlined the social strategies that are needed to further reduce infant mortality in the United States. The participants asserted that "services and public education should ensure that care to pregnant women begin in the first three months of pregnancy and continue through the early life of the infant."

In 1981, legislation was enacted to amend the Maternal and Child Health (MCH) Services Block Grant Program, transferring to the States the primary responsibility of providing health care services under the MCH Consolidated State Programs. The PHS limited its service program to special projects of regional and national significance under the title "Consolidated Federal Programs." These projects included:

- Training of 15 neonatologists, 40 nurse-midwives, and 34 perinatal nurse specialists. Programs in nutrition were to provide continuing education to almost 900 physicians, nutritionists, nurses, and other health care providers.

- Research programs addressing the needs of mothers and children and examining the social conditions affecting their health. Recent achievements include the design of a lower limb prosthesis for young amputes, and a vision and development screening test for preschoolers. Research conducted by university analysts showed that "the proportion of low income families emerged as the strongest and most consistent determinant of census tract variations in infant mortality."

- Genetic service projects in 19 States, including prenatal screening, genetic counseling and education, and the screening of newborns for metabolic disorders.

In 1981, the PHS initiated a public information program, "Healthy Mothers, Healthy Babies," as a means of contributing to these objectives. As a part of this effort, a "Healthy Mothers, Healthy Babies" coalition was formed, servicing a partnershhip among more than 50 voluntary, professional, and government agencies. Its purpose is to:

- Promote public awareness and education in preventive health habits for all pregnant women and their families.

- Develop networks for sharing information among groups concerned about improving the health of mothers and babies.

- Distribute public education materials on topics related to improving maternal and child health.

- Assist the development of community "Healthy Mothers, Healthy Babies" coalition.

Through these cooperative efforts, combined with continuing research designed to improve the health of women before, during, and after their childbearing years, and to safeguard the health of their children, the PHS hopes to contribute to the achievement of the following health objectives for the Nation by 1990:

- The national infant mortality rate (deaths for all babies up to one year of age) should be reduced to no more than 9 deaths per 1,000 live births.

- No county and no racial or ethnic group of the population (e.g., Black, Hispanic, Indian) should have an infant mortality rate in excess of 12 deaths per 1,000 live births.

- The maternal mortality rate should not exceed 5 per 100,000 live births for any county or for any ethnic group.

- The incidence of infants born with Fetal Alcohol Syndrome should be reduced to 1 per 2,500 live births.

- Low birthweight babies (2500 grams and under) should constitute no more than 5 percent of all live births.

- No county and no racial or ethnic group of the population should have a rate of low birthweight infants that exceeds 9 percent of all live births.

- Virtually all women and infants should be served at levels appropriate to their need by a regionalized system of primary, secondary, and tertiary care for prenatal, maternal, and perinatal health services.

- The proportion of women in any county or racial or ethnic group who obtain no prenatal care during the first trimester of pregnancy should not exceed 10 percent.

- A system should be in place for comprehensive and longitudinal assessment of the impact of a range of prenatal factors (e.g., maternal exposure to radiation, ultrasound, dramatic temperature change, toxic agents, smoking, use of alcohol or drugs, exercise, or emotional stress).

- Virtually all pregnant women at high risk of having a fetus with a condition diagnosable in utero should have access to counseling and information on aminiocentesis and prenatal diagnosis, as well as therapy as indicated (12).

Health behaviors. As discussed in the commissioned paper "Smoking and Women's Health," a recent Gallup Poll indicates that more than 30 million women--that is 36 percent of all American women--smoke. The rising incidence of lung cancer among women reflects the detrimental effects that cigarette smoking has on their health. When a woman smokes during pregnancy, the adverse effects also extend to the unborn fetus.

Studies by NICHD have shown that women who smoke are more likely than women who do not smoke to have babies who are smaller in size and lighter in weight, are born prematurely, have lower Apgar scores, and are more likely to become ill or die within the first year.

One of the PHS objectives for this decade is that by 1990, the proportion of women who smoke during pregnancy should be no greater than one half of the proportion of women overall who smoke (13).

As mentioned in the commissioned paper "Alcohol and Maternal and Fetal Health," maternal use of alcohol during pregnancy is believed to be the most important single known cause of drug-induced birth defects. It has been estimated that there are one million alcoholic women of childbearing age in the United States today. According to the National Institute on Alcohol Abuse and Alcoholism (NIAAA), one or two of every 1,000 babies are born with fetal alcohol syndrome (FAS) which may include facial abnormalities, growth deficiencies, birth defects, and mental retardation. Studies by NICHD scientists on pregnant monkeys exposed to high blood alcohol levels showed that blood vessels in the umbilical cord collapse temporarily, causing significant oxygen depriva- tion and abnormal blood acidity in the fetuses.

Following a recommendation by the U.S. Surgeon General that pregnant women refrain from drinking, a national survey made public in January 1984 reported that 30 percent of the women who drank before pregnancy abstained while pregnant. The survey, conducted by the NCHS, involved 4,400 women who gave birth in 1980. Continued public education by the PHS and private health professionals should motivate more women to give up alcohol before and during pregnancy. A PHS goal is to see the proportion of babies with FAS reduced to one in 2,500 by the end of this decade (14).

Although the evidence of adverse effects of alcohol on a fetus is strong, less is known about the impacet on the fetus of such "street drugs" as heroin, morphine, and methadone when used by a pregnant woman. In addition to possible birth defects during the first week of life, babies born to drug-addicted mothers are likely to develop withdrawal symptoms which may include irritability, vomiting, diarrhea, sweating, and convulsions. Some studies suggest that infants of women with heroin or methadone addiction are born underweight.

What kinds of physical exercise are safe during pregnancy? As more women are hired for traditionally "male" jobs and as the physical fitness movement attracts more women of childbearing age, this question becomes increasingly important. In general, women are encouraged to continue any moderate exercise started before they become pregnant. This may include swimming, tennis, dancing, cycling, or walking.

Conversely, how does exercise affect the growing fetus? Precise answers are not available because few studies have been conducted on this subject. In a workshop sponsored by the NICHD in late 1982, pregnancy and exercise experts surveyed current research and outlined steps to resolve the unknowns. Future research is expected to include prospective studies measuring pregnancy outcome in women who regularly perform different levels of exercise, as well as studies of the effect of exercise on the blood flow and endocrine systems of women.

The PHS has as its objective that, by 1990, 85 percent of women of childbearing age should be able to choose their foods and exercise wisely, and understand the hazards of smoking and using alcohol and "street drugs" during pregnancy.

Prenatal care. A recent survey shows that more and more women are realizing the importance of early pregnancy care. In 1980, prenatal care was sought by 63 percent of Black mothers and 79 percent of White mothers during the critical first trimester of pregnancy. By contrast, 4.3 percent of White mothers and 8.8 percent of Black mothers had no prenatal care at all or sought it in the seventh month or later.

During pregnancy, an average-sized woman should add about 200 calories a day to her diet. Most doctors recommend that she gain a total of 20 to 30 pounds. Nutritional and metabolic disorders that may complicate pregnancy include diabetic mellitus excessive morning sickness which in extreme cases may lead to starvation; dehydration and acidosis; and vitamin or mineral deficiency, including iron deficiency and folic acid anemia, which, if uncorrected, may cause birth defects and mental retardation in the infant.

Among the most important recent advances made in medical technology are the development of instruments and techniques that allow the diagnosis of fetal abnormalities before birth. Analysis of a small sample of the mother's amniotic fluid (amniocentesis) around the 16th week of pregnancy can detect any of more than 200 genetic diseases and chromosomal abnbormalities, including Down syndrome. This technique can also be used later in pregnancy to assess fetal lung maturity.

At a 1979 Consensus Development Conference sponsored by the NICHD, a panel of experts recommended that pregnant women age 35 or older should be given the option of undergoing amniocentesis for the detection of chromosomal defects. Today, the NICHD is supporting research to refine techniques of diagnosing fetal abnormalities by using amniotic fluid obtained through amniocentesis.

A new and still experimental technique to diagnose abnormalities in a baby before birth is chorionic villus sampling (CVS). It can identify most of the abnormalities detectable through amniocentesis at 8 to 10 weeks of pregnancy with a diagnosis in 24 hours, in contrast to amniocentesis which cannot be performed until approximately 16 weeks of gestation and requires two to four weeks for results. NICHD-supported studies are now being planned to test the safety and accuracy of CVS, which is particularly useful in the detection of Down syndrome, sickle cell anemia, Tay-Sachs disease, and other genetic defects (15, 16).

Ultrasound is a prenatal diagnostic technique used to diagnose multiple pregnancy and various complications such as hydrocephalus or ectopic pregnancy, and to measure the size of a fetus' head or body to assess possible growth retardation.

In February 1984, the NICHD sponsored a special Consensus Development Conference to assess the benefits andf risks of the use of ultrasound in pregnancy. The 14-member panel concluded that the available data on its safety and efficacy do not allow a recommendation for routine screening by ultrasound at this time. However, the participants identified more than two dozen conditions in which the use of ultrasound could benefit pregnancy outcome, and specific studies to improve future estimates of bioeffects and risks were recommended.

A dietary treatment has been used for years in children to control the inborn error of metabolism, phenylketonuria (PKU) which, if untreated, usually results in mental retardation. Success of theis treatment has permitted women with treated PKU to become pregnant and they give birth to retarded infants due to the high phenylalanine levels to which the fetus is exposed. Treatment of pregnant PKU mothers with low-phenylalanine diets has not yet proved to be effective in preventing the fetal effects of maternal PKU; the NICHD is launching a clinical trial to evaluate this possibility.

High risk pregnancies. Through research, epidemiologists have identified several groups of women who are more likely than others to deliver premature or low birthweight (less than 5 1/2 pounds) infants. These "high risk" groups are characterized by one of the following: Chronic and acute conditions in the mother, previous childbearing problems, very young age (less than 15), poor nutritional status of the mother, more than moderate use of cigarettes, alcohol, or illicit drugs.

Gestational diabetes, in which glucose intolerance is discovered during pregnancy, frequently leads to complications for both mother and child. Two or three of every 1,000 pregnancies are complicated by diabetes in the mother. Specific problems associated with diabetic pregnancy are birth defects, fetal death late in pregnancy, larger (heavier) than normal babies (9 pounds and up), and respiratory distress of the newborn.

Responding to the multiple challenges posed by diabetes in pregnant women, the NICHD has launched a 5-year clinical study of Diabetes In Early Pregnancy (DIEP) to assess whether rigid maternal glucose control will reduce birth defects. The Institute also has established four special research programs to the study of diabetic pregnancies, addressing the question of how the disturbance in the mother's metabolic system changes the fetal environment and affects the development of the fetal brain and other vital organs. In 1983, the National Institute of Arthritis, Diabetes, and Digestive and Kidney Diseases (NIADDK) launched a large prospective study of diabetes that will include 1,000 patients over an 8-year period. The study seeks to determine whether normalizing blood glucose helps prevent or lessen diabetic complications. Work is being conducted by the NIH Clinical Center Blood Bank and the National Heart Lung and Blood Institute (NHLBI) to improve methods of blood transfusion for patients with sickle cell anemia, a serious hereditary blood disease that affects one in every 625 Black Americans. Complications during pregnancy may be life-threatening to the sickle cell patient and to the fetus. Pulmonary infarction, eclampsia, and infections are likely to occur. Fetal death and low birthweight infants are more common in sickle cell disease patients than in others.

One out of 20 pregnant women develops toxemia or preclampsia, a condition characterized by hypertension, excessive weight gain and edema. Preclampsia may lead to eclampsia which is characterized by convulsions and coma, sometimes leading to death. The NICHD and NHLBI are jointly sponsoring research examining the causes of preclampsia.

The number of reported ectopic pregnancies tripled from 17,800 in 1970 to 52,200 in 1980, and the rate among total pregnancies doubled in the U.S. As a result, ectopic pregnancies are now the leading cause of maternal death during the first 3 months of pregnancy and the leading cause of all maternal deaths among Black women. The increase is believed to be caused in part by the residue of pelvic inflammatory disease, especially gonorrhea and chlamydial infections which cause scar tissue in the fallopian tubes. As mentioned earlier, diagnosis of ectopic pregnancy has been facilitated in recent years by use of ultrasound (17).

Childbirth. During the past 15 years, an increasing number of women--about 10 percent of those giving birth--have chosen to do so in a home-like setting and without anesthesia. As a result, a new generation of trained nurse-midwives has emerged and more than 100 birth centers, operating in close proximity to a hospital, have been established nationwide. Childbirth preparation and education classes are well attended, and most also encourage the father's participation. A 1983 study found that 4 out of 5 fathers were present in the delivery room during the birth of their children.

In 1981, of the 3.6 million live births in the U.S., 68,291 were assisted by a midwife. Of the 37,333 births that took place outside a hospital, 12,708 were identified as attended by a midwife and 10,898 by a physician.

Cesarean childbirth may be recommended in cases of severe dystocia (complications of labor), fetal distress or previous cesarean delivery. Although maternal death during childbirth is extremely uncommon, national figures show cesarean birth carries up to four times the risk of death compared to vaginal delivery. Surgery-related morbidity (infection, embolism, injury to surrounding organs, and adverse reaction to anesthesia) is also more common during cesarean than vaginal deliveries.

The incidence of cesarean childbirth in the United States increased from 5 percent to 16.5 percent of all births between 1970 and 1980. Concern about this tripling incidence caused the NICHD to convene a 3-day Consensus Development Conference on the subject late in 1980. A panel of scientists, practicing physicians, and consumers concluded that "this trend of rising cesarean birth rates may be stopped and perhaps reversed, while continuing to make improvements in maternal and fetal outcomes." The panel found that many women can safely deliver vaginally after having a cesarean delivery in a previous pregnancy, and it is in this group that the greatest reduction in the rate of cesarean delivery is possible.

According to guidelines prepared by the American College of Obstetricians and Gynecologists, if a woman has had an earlier cesarean delivery, a vaginal delivery is justified provided that an operating room and anesthesiologist are available and no serious medical complications present themselves.

In addition to having a lower mortality and morbidity rate, vaginal childbirth has the benefits of shorter hospitalization and recovery periods, reduced cost, and earlier mother-infant interaction. Despite these advantages and the findings of the NIH Consensus Panel on Cesarean Childbirth, the incidence of cesarean delivery rose from 16.5 percent in 1980 to approximately 18.5 percent in 1982.

Research is needed to identify the factors till contributing to this trend and place into perspective the benefits and risks of cesarean delivery to mother and infant (18).

Breastfeeding. Further evidence of the growing movement to treat childbirth as a "natural" experience is the increasing number of mothers who choose to breastfeed their babies.

At the time of hospital discharge, almost 60 percent of mothers are now breastfeeding and the number seems to be increasing, especially in higher socioeconomic groups. Human milk is the ideal food for infants not only for its nutritional value, but also for its ability to confer passive immunity. Breastfeeding is beneficial to the mother because it stimulates the release of oxytocin which reduces bleeding and fosters uterine involution and healing. In addition, nursing mothers have been found to get back to their prepregnancy weight faster than non-nursing mothers, probably because the high caloric expenditure of nursing helps them burn up fat reserves accumulated during pregnancy.

In view of the importance of breastfeeding to mother and infant, NIH-funded research is exploring the biological and psychosocial factors that motivate mothers to breastfeed or, conversely, choose not to.

The PHS strongly supports breastfeeding and has made as one of its objective that, by the end of this decade, 75 percent of all mothers will nurse their newborns when leaving the hospital and that 35 percent will continue to do so at least until the child is 6 months old.

A Surgeon General's Workshop on Breastfeeding and Human Lactation was held on June 11-12, 1984, at the University of Rochester in New York. Some 100 participants made recommendation on key issues such as deciding to breastfeed, sociocultural influences and determinants of infant feeding practices, support services for mothers who breastfeed, roles and responsibilities of the health care system in promoting breastfeeding, vocational supports and barriers to breastfeeding, educating health professionals and the public on breastfeeding, and research needs in breastfeeding and human lactation (19).

Low birthweight infants. Infant mortality in the U.S. dropped from 42,700 deaths in 1981 to 39,000 in 1983, or from 11.7 to 10.9 per 1,000 live births. (For Black infants, the 1981 mortality rate was 20.0 and for Whites, 10.5 per 1,000 live births.) Of these deaths, about two-thirds are attributable to low birthweight and prematurity or both. Largely due to the high incidence of low birthweight, our country ranks only 16th on the worldwide infant mortality scale.

Improving this position offers the PHS one of its greatest challenges, and the NICHD has responded with aggressive research programs. Many scientists are focusing their studies on the mechanisms and trigger both normal and premature labor. Other researchers, supported by the NICHD and the National Institute of Allergy and Infectious Diseases (NIAID), seek to determine whether certain vaginal and urinary tract infections can result in premature labor. Still other NICHD investigators are probing the phenomenon of intrauterine growth retardation.

In the spring of 1984, a PHS Low Birthweight Work Group was formed to coordinate all research and service activities directed at reducing the incidence of low birthweight. In a separate effort, NICHD scientists are collaborating with private foundations and investigators and public health officials from the District of Columbia in a project that aimed at reducing the incidence of low birthweight among infants born in Washington, D.C.

The goal of these research efforts by NIH and others, combined with PHS active public education and service efforts, is to reduce the rate of low birthweight from 7 percent of all live births to 5 percent by 1990 (17).

Stillbirth and miscarriage. It has been estimated that reproductive loss affects about 900,000 women each year in the U.S. alone. The way individuals and families cope with such loss depends on the individual person, family ties, the availability of other support groups, religious beliefs, attitude toward pregnancy, age, fertility status, and other circumstances.

During the past decade, many support groups have emerged and articles have been written to aid parents who have lost an infant or child or who are faced with the care of a handicapped child. But little help is available to parents who experience a miscarriage or stillbirth.

The NICHD is supporting a three-year project to study the short- and long-term effects of the loss of a fetus or newborn on the parents and family. The findings will assist health care providers and social workers in their task of helping parents and siblings adopt constructive grieving and coping strategies (20).

Other Health Concerns

Urinary tract infections. Urinary tract infections (UTI) are one of the most common causes of absenteeism in working women. Second only to upper respiratory infections in frequency, UTIs affect one in five women at some time in their lives. Despite treatment with antibiotics, UTIs tend to recur, accounting for more than 6 million visits by women to physicians each year.

Women are about five times more likely than men to develop UTIs, probably because bacteria must travel a shorter distance through the female urethra than through that of the male.

Studies suggest that a pregnant woman with undiagnosed and untreated UTI may run the risk of premature delivery, resulting in a low birthweight baby that is, in turn, more prone to illness and death. The NICHD has initiated a study to identify the nature of the risk and determine whether treating the silent infection will prevent premature delivery.

NIADDK supports research designed to clarify the etiology and pathogenesis of infections of the upper and lower urinary tract. One ongoing study, for example, is focused on the identification of a specific type of bacterium that tends to ascend to the kidneys. A diagnostic kit has been developed to show the presence of the bacterium and permit prompt, vigorous treatment to avoid kidney infection.

Osteoporosis. As discussed in the commissioned paper "Osteoporosis in Women," osteoporosis, a weakening of bone due to loss of calcium, is a debilitating chronic disease that affects some 20,000,000 Americans, especially older women, and costs the Nation at least $3,800,000,000 per year. It is estimated that about 1,300,000 fractures attributable to osteoporosis occur annually in people 45 years of age and older. Among those who live to be 90 years old, one-third of women and 17 percent of men will suffer a hip fracture due to osteoporosis. Most older patients with hip fractures fail to recover normal activity and approximately one in five dies within one year after such a fracture due to complications of surgery.

According to a 1984 NIH Consensus Development Panel, current data point to estrogen and calcium deficiences as the major causes of primary osteoporosis. In postmenopausal women, estrogen replacement therapy (ERT) may be prescribed.

The NIH panel recommended--in addition to ERT--adequate nutrition and a calcium intake of 1,000 to 1,500 mg a day and 600 to 800 I.U. of vitamin D per day. To prevent bone loss, the panel also recommended a program of modest weight-bearing exercise such as walking.

In recent clinical trials supported by the NIADDK designed to improve the treatment of osteoporosis, investigators found that a vitamin D metabolite, if used daily, not only increases calcium retention in bone, but also increases bone volume and reduces fracture rates by 50 to 75 percent. Research on a combination of fluoride and calcium holds promise for actually increasing bone mass. Drugs such as parathyroid hormone, thiazides, calcitonin that tend to stabilize bone tissue and halt further bone loss are also being studied (22, 28).

Obesity. The importance of sound nutrition is increasingly emphasized as a contributor to good health for both men and women. Among things women can do for themselves, as well as their families, is to promote good nutritional habits.

More than 25 percent of the American women between ages 20 and 75 are considered overweight, according to an NCHS study that used height-weight ratio as a criterion. However, obesity is not randomly distributed thoughout the population. It is known to be less prevalent in women of higher socioeconomic status and is most common in both Black and White lower-income women and in median income males.

Using the triceps skin-fold thickness as an indication of total body fat, NICHD-supported investigators have learned that Obesity also follows family lines. A child of two obese parents has a 300 percent greater chance of becoming obese, and at age 17 this child may be 3 times as fat as comparable children of two slender parents. Institute-funded researchers also found that infantile obesity does not predict adult obesity, but obesity after age 4 does (20).

Hypertension. Although more men than women suffer from hypertension, the enormity of the problem dictates that it be considered in any discussion of women's health. Obesity is a major contributor to high blood pressure which affects one out of six Americans. The incidence is even higher in Blacks--one in four Blacks has high blood pressure--but the reasons for this are not clear. About one in three or 32 percent of American women between 25 and 74 years old, has high blood pressure. (For men in the same age group, the incidence is 38 percent.)

Hypertension contributes directly or indirectly to about 1,000,000 deaths a year, affects 35,000,000 people and costs more than $15,000,000,000 annually. As discussed in the commissioned paper "Heart Disease in Women," the most common complications of hypertension are arterosclerosis, heart attack, stroke, and kidney failure. High blood pressure is treatable if detected early and managed properly. Weight reduction and/or salt restriction may decrease blood pressure to normal levels and eliminate the need for medication in 20 to 25 percent of individuals with less severe hypertension. Exercise, stress reduction, and life-long treatment with medication can significantly reduce the risk of complications.

In January 1985, the NHLBI announced the results of a 7-year study indicating that lowering serum cholesterol reduces the risk of heart disease in certain of predisposed men. It is likely that reducing serum cholesterol will benefit women in this same group as well (24).

Anorexia nervosa It has been estimated that one out of 200 American girls between the ages of 12 and 18 will develop some degree of anorexia nervosa and that 10 to 15 percent of these will die, probably after losing at least half their normal body weight.

Anorexia nervosa is a disorder of self-starvation and manifests itself in an extreme avoidance of food. The disorder mostly affects girls from White middle to upper class families; only about six percent of anorectics are adolescent boys.

Anorexia nervosa can cause severe psychological and hormonal problems, and cessation of menstruation. Other symptoms may include a bizzare preoccupation with food, hyperactivity, and the individual may have a distorted image of her or his own body. Results of studies supported by NICHD and NIMH indicate that anorectics suffer from a phobia of eating and gaining weight, rather than a loss of appetite. The causes of this disorder are unknown although it is thought to be linked to a combination of psychological, environmental, and physiological factors.

Another form of anorexia is bulimia. Patients with this illness indulge in "food binges" and then purge themselves by either inducing vomiting immediately after eating or taking laxatives or diuretics.

Treatment for anorexia and bulimia usually consists of nutritional therapy, individual psychotherapy, and family counseling. Hospitalization is required in severe cases. Follow-up therapy is recommended for 3 to 5 years because of the high risk of relapse (25, 26).

Diabetes. More than 10 million Americans are affected by diabetes. Estimated to be the fifth leading cause of death in the U.S., diabetes occurs in twice as many women as men, and is found more frequently among Black and low income populations. The causes of diabetes are not known but its impact is considerable.

- Diabetes is responsible for almost 50 percent of all foot and leg amputations, 20 percent of all cases of kidney failure, and 15 percent of all blindness.
- Twenty-five percent of diabetics have heart disease.
- Some 34,000 deaths in the U.S. are directly attributable to diabetes annually, and an additional 100,000 deaths result from its complications.
- Between 1976 and 1983, the economic costs of diabetes, in terms of medical care and losses due to disability and premature deaths, have doubled to become approximately $9,700,000,000 annually. Because 40 percent of diabetics are age 65 and older, much of this economic burden falls on public resources such as Medicare and Medicaid.

No cure exists for diabetes at this time. Gestational diabetes is discussed in the pregnancy section of this chapter. Mature-onset (Type II) diabetes can often be controlled through weight reduction and improved physical fitness. Insulin-dependent (Type I) diabetes is controlled with daily doses of insulin.

In the case of diabetic nephropathy (kidney failure), hemodialysis may be required. The U.S. Government finances most renal dialysis procedures in the United States. The Indian Health Service in Albuquerque, New Mexico, sponsors a special diabetes and renal dialysis program since the American Indian population has a higher than average incidence of diabetes.

Diabetic retinopathy, a serious cause of blindness, may be treated by photocoagulation to seal off and destroy bleeding retinal vessles and diseased tissues. Another technique, vitrectomy, involves surgical removal of cloudy eye fluids.

Major advances have been made in diabetes research. Pumps that deliver insulin in preprogramed amounts have been developed and are now being tested. Advances in immunology hold promise for transplanting healthy insulin-producing cells to correct the diabetic condition. Scientists have identified genetic factors that appear to be associated with the development of diabetes, and the discovery that insulin-producing beta cells of the pancreatic islets can be infected and destroyed by common viruses, could eventually result in the development of a vaccine to prevent some types of diabetes (27).

Cholesterol Gallstones. An estimated 25,000,000 Americans have gallstones, and 6,000 people die each year from complications of gallbladder disease. Most people with gallbladder disease have gallstones formed from the cholesterol found in the gallbladder's bile.

Women develop cholesterol gallstones more often than men. In the under-50 age group, women are 4 times more likely than men to develop gallstones, and women 50 and older are still twice as likely to do so. Among other factors, reproductive history and sex hormones play a role in gallstone development. The more children a woman has had, the more likely she is to develop gallstones. Although the results of some newer studies disagree, earlier research has suggested that women who take oral contraceptives--which contain estrogen--are at slightly greater risk of gallbladder disease.

The NICHD is supporting two studies on the relationship between the use of oral contraceptives and the risk of forming cholesterol gallstones. One project will determine whether the findings of older studies can be explained by the use in past years of "pills" with higher estrogen content among other factors. The second study will examine the relationship between the use of the pill and the risk of gallstone formation in Hispanic and American Indian women.

Heredity undoubtedly plays a role in contributing to the risk of developing gallstones. In the Pima Indian tribe of Arizona, for example, 70 percent of the women and 50 percent of the men have gallstones by age 30. The high prevalence of gallstones in the Pima tribe has enabled scientists to uncover the mechanism of formation of cholesterol stones and to develop a drug to dissolve them. The drug, called chenodiol, was tested in a large trial sponsored by the NIADDK. The study showed that chenodiol can provide an alternative to surgery for some patients with cholesterol stones although there are limitations to its use and some side effects exist. The drug was recently approved by the Food and Drug Administration (FDA) (20).

Arthritis. According to 1980 data, over 35,000,000 people in the U.S suffer from arthritis, a term that covers more than 100 rheumatic and related disorders of the joints. Older people are most frequently affected. In general, more women are affected than men. The Arthritis Foundation estimates the economic impact of arthritis to be about $14,000,000,000 per year.

An estimated 250,000 American children have some form of juvenile rheumatoid arthritis (JRA). JRA, although chronic, is different from arthritis that has its onset in people over 16 years of age and the prognosis is usually better than for adults.

The three major forms of JRA are systemic JRA, affecting about 20 percent of JRA children regardless of age and sex; poly-articular JRA, which accounts for 40-50 percent of all JRA, affects girls more than boys, and usually strikes the small joints of the hands in a symmetrical way; and pauciarticular JRA, which accounts for 30-40 percent of all JRA and initially affects only a few large joints. Girls with pauciarticular JRA may develop manifestations of iridocyclitis and failing vision; in some boys the spine and hips may be affected (ankylosing spondylitis). Treatment for JRA includes medication, rest, exercise, eye care, a balanced diet, and sometimes surgery. Medication may include aspirin, nonsteroidal anti-inflammatory drugs, gold injections, antimalarial drugs, corticosteroids, and penicillamine.

Osteoarthritis (OA) affects some 16,000,000 Americans. More common but less damaging than rheumatoid arthritis, osteoarthritis occurs most often in older people. The spine, weight-bearing joints, and fingers are most likely to be affected by a breakdown of the cartilage followed by bone overgrowth. The symptoms of OA tend to worsen in women past menopause. Scientists are studying the role sex hormones in cartilage metabolism and are examing the biochemistry and structure of cartilage to answer the question as to why damaged cartilage does not repair itself.

Rheumatoid arthritis (RA) affects about 6,500,000 Americans--twice as many women as men. One out of six patients becomes deformed or crippled due to joint damage from chronic inflammation. In some, the heart, blood vessels, and lungs are also affected. RA tends to be chronic and run an erratic course of flare-ups and remissions which make therapy particularly difficult to evaluate.

NIH scientists have found that RA patients produce a greater than normal amount of antibody to Epstein-Barr virus because of a defect in the T-suppressor cells that normally shut off antibody production. This discovery may serve as a basis for future research into the causes and prevention of RA. Other areas under study include leukapheresis (removal of white blood cells from the blood) and the search for an oral gold compound that is equally effective but less expensive and with fewer side effects than the traditional gold salt injections (28-30).

Systemic lupus erythematosus. More than 500,000 Americans have a potentially fatal, connective tissue disorder known as systemic lupus-erythematosus (lupus). Lupus is diagnosed in an estimated 50,000 people each year, almost 90 percent of whom are young women. It is about three times more common in Black than in White women. The disease, a disorder of the body's immune system, may affect the kidneys, heart, lungs, and central nervous system. NIADDK scientists involved in lupus research are currently concentrating on the kidney manifestations, since death rates are highest in patients with renal involvement. The genetic characteristics of lupus are also being studies in patients, their spouses, and immediate blood relatives.

In 1955, 50 percent of lupus patients survived 4 years after diagnosis. Today, more than 95 percent survive 5 years, and more than 80 percent survive 15 years (31). A further discussion of these disorders may be found in the commissioned paper "Lupus Erythematosus."

Thyroid disorders. Hyperthyroidism occurs 5 times more often in women than in men, usually developing between ages 30 and 50. The most frequent symptoms include nervousness, increased activity, increased sweating and appetite, insomnia, tachycardia, weight loss, and hypersensitivity to heat.

Not all causes of hyperthyroidism are known though the disorder is thought by many to be an autoimmune disease. The diagnosis is confirmed by blood tests. Treatment may consist of anti-thyroid medication, radioactive iodine treatment, or surgical removal of all or part of the thyroid gland.

Hypothyroidism is about four times more likely to occur in women than in in men. Here, too, the causes are unknown. Symptoms may include swollen neck and face, dry scaly skin, intellectual impairment, constipation, excess menstruation, hair loss, and cold intolerance. Treatment consists of thyroid hormone replacement therapy.

Pituitary adenoma. In recent years, a sensitive assay for serum prolactin has been developed. With this assay, a prolactinoma has been identified as the most frequent type of pituitary adenoma. This tumor is a cause of amenorrhea and infertility, but can now be treated successfully with drugs or pituitary surgery.

Parathyroid disorders. In hyperparathyroidism, the increased production of parathyroid hormone (PTH) may result in fractures, kidney stones, muscular weakness, and abdominal pains. Parathyroid hormone controls calcium metabolism in the bone, kidneys, and gastrointestinal tract, and in hyperparathyroidism, excess PTH causes increased calcium in the blood and urine. Hyperparathyroidism occurs twice as often in women as in men. It has been estimated that one out of every 1,000 routine blood tests identifies one case of hyperparathroidism. Excessive PTH secretion may be caused by parathyroid hyperplasia (excessive cellular growth), adenoma (benign tumor), or carcinoma. Treatment of hyperparathyroidism is aimed at controlling the high levels of calcium. Surgical removal of the parathyroid glands is successful in 90 percent of the cases. NIH researchers are studying the mechanisms that control the secretion of parathyroid hormone in both the clinical and laboratory setting.

Exercise and Physical Fitness

A 10-year study of longevity in America has shown conclusively that regular exercise, alone with other good living habits, can help increase life expectancy by as much as 7 years for women and 11 years for men.

Physical exercise contributes to good health by enhancing musculoskeletal strength and flexibility, improving the efficiency of the heart and lungs, assisting in weight reduction, protecting against adult onset diabetes, reducing emotional stress, and strengthening stamina and self-image.

In 1956, the President's Council on Youth Fitness was established in response to the poor performance of American school children in standardized physical fitness tests. When it was recognized that the fitness problem permeates all age groups, the President's Council on Physical Fitness and Sports (PCPFS) emerged.

Today, the PCPFS promotes physical fitness in persons of all ages including the elderly, and its activities are an integral part of the national preventive health care program. Council programs include technical assistance to schools, clubs, recreation agencies, and employers; regional clinics and workshops in physical fitness and sports; a public information campaign; and a special Presidential Awards Program (32).

In its 1980 publication "Promoting Health/Preventing Disease: Objectives for the Nation," the PHS proposed a series of specific objectives aimed at improving the health of Americans by the year 1990. Physical fitness and exercise were listed among the 15 priority areas.

It was pointed out in the report that "through physical fitness and exercise activities have increased in recent years...generous estimates place the proportions of regularly exercising adults ages 18 to 65 at something over 35 percent." Also noted was the fact that certain groups demonstrate disproportionately low rates of participation in appropriate physical activity, including girls and women, older people, physically and mentally handicapped people of all ages, inner city and rural residents, people of low socioeconomic status, and residents of institutions. Accordingly, the following long-range objectives were proposed:

- By 1990, the proportion of children and adolescents, ages 10 to 17 participating regularly in appropriate physical activities, particularly cardiorespiratory fitness programs which can be carried into adulthood, shoud be greater than 90 percent.

- By 1990, the proportion of adults 18 to 65 participating regularly in vigorous physical exercise should be greater than 60 percent.

- By 1990, 50 percent of adults 65 years and older should be engaging in appropriate physical activitie, e.g., regular walking, swimming, or other aerobic activity.

The PHS defines "appropriate physical activity" as "exercise which involves large muscle groups in dynamic movement for periods of 20 minutes or longer, three or more days per week, and which is performed at an intensity requiring 60 percent or greater of an individual's cardiorespiratory capacity."

Other specific objectives listed by PHS include increased public and professional awareness, improved services, and improved surveillance and evaluation systems related to physical fitness and exercise.

Since women have low rates of participation in appropriate physical activity, these objectives are particularly important for them.

The challenge to work cooperatively towards these goals has been taken up by the five major agencies of the PHS. Through their efforts and those of education, industry, labor, and community organizations, it is hoped that the momentum toward improved physical fitness will continue, contributing to a longer, more healthful and enjoyable life for all Americans.

"If exercise could be packed into a pill, it would be the single most widely prescribed and beneficial medicine in the Nation," says Robert N. Butler, M.D., former director of the National Institute on Aging and current Brookdale Professor of Geriatrics, Mount Sinai School of Medicine in New York. Like any medicine, however, too much, or inappropriate use of exercise can be harmful. Excessive physical exercise can lead to heart attacks, musculoskeletal problems, and amenorrhea in women. Intensity and duration of any exercise program should be dictated by the individual's health, age, and physical condition.

Research is needed to identify more clearly the benefits and hazards of different types and levels of exercise in women and men of different ages (12).

Cosmetics, Cosmetic Surgery, and Megavitamins

The contemporary societal norms of what constitutes an attractive women suggest one who is pretty, young, and slender, with attractive facial features and silky hair. The various media support and actively promote this image of today's desirable woman. In striving to meet these expectations, women must be aware of both the potential benefits and detriments to their health which may occur. For example, many women of all ages are embarking upon exercise and dietary regimens that may be beneficial to them. Certainly the PHS 1990 objectives for the nation emphasize and encourage sound nutrition and exercise programs for women of all ages.

In addition, women are more likely than men to use, and to be encouraged to use, a variety of other means to achieve the desirable physical norms: facial cosmetics, diet aids, perfumes, douches, hair dyes, creams and lotions, bath products, special shampoos and conditioners, and even plastic and reconstructive surgery.

While many of these cosmetics may make a woman look and feel more attractive, they may also pose a health risk. For example, the ingredients of some beauty products may induce skin rashes or allergic reactions. Cosmetics that are improperly used or stored too long may become contaminated with harmful bacteria which can cause skin or eye infections. Misuse of vaginal deoderants or douches may make a woman more susceptible to vaginal infections.

At the extreme end of the spectrum are the use of diet and beauty products which make false or misleading claims (such as, the diet pill claims, "lose 10 pounds in 2 days," or a bust developer which promises to "increase your bust size five inches in two weeks"). These products may do harm to both a woman's health and her pocketbook.

Women of all ages, and indeed everyone, should become more familiar with the concepts of basic health and nutrition and, as consumers, learn how to read product labels and advertisements with care, and to consider how the products they use may affect their health. Many women assume that cosmetics are tested as rigorously for safety before marketing as are drug products. However, while cosmetics do undergo premarket testing by industry, industry is not required by law to prove their products to be safe and effective as producers of drug products must. The FDA, which regulates cosmetic and beauty items, does require ingredient labeling and warnings on cosmetic products (e.g., "use as directed," "do not use on broken skin," or "if rash develops, discontinue use"). While it is sometimes difficult to resist the lure of cosmetic and beauty ads, each woman should read product information carefully before buying.

Women may also choose to alter the way they look through reconstructive or plastic surgery (such as face lifts, surgical reduction of hips, buttocks, and breasts; breast implants; etcetera). For many women who need reconstructive surgery after cancer, accidents, or birth defects, such alterations can improve both their mental and physical health. For healthy women who choose cosmetic surgery to improve their looks, the efects may also be positive, but must be balanced against the risks associated with such procedures. For example, breast implants containing silicone gel have been known to leak and, in rare instances, to break. When this occurs, not only will the woman have to undergo surgery to replace the implant, but will also have to contend with the possible ill effects of silicone gel migrating into her tissues or bloodstream. Liquid silicone has also been used for removing wrinkles, crow's feet, and acne scars. However, because of some of the severe health consequences associated with such a procedure (formation of cysts or tumors, swelling, discoloration, and even death), it is limited to experimental use for cases of severe facial disfigurement.

Fat suctioning, a surgical procedure used in treating obesity, is also becoming popular, but has not been studied extensively for its effects on health.

Proper diet is another critical factor that affects the way women look and feel. As mentioned earlier in this chapter, more than 25 percent of American women are considered overweight. Motivated by desire to achieve the societal norm of a very slender body, many women are susceptible to the claims made for special diet plans, diet aids, and nutrient supplements. However, these women must be made aware that restricted to one type of nutrient (e.g., liquid protein) may have severe and even fatal health consequences. The use of certain vitamin supplements (vitamins A and D in particular) in megadoses may also have adverse health effects.

In general, women have to use common sense when it comes to cosmetic use, dieting, and weight reduction. They also need correct information on sound nutrition, dietary habits, and exercise, and their relation to weight loss.

Labor Force Participation and Health Status

If there are any biological factors causing differences in mortality rates between males and females in the same occupational environment, they are as yet unknown because so few occupational studies have included female workers. Thus, research so far has not shown women to have a higher susceptibility to toxic substances than male co-workers. However, there may be psychosocial differences that render women more susceptible. As discussed in Chapter One which examined the social factors affecting women's health, several adverse occupational health consequences affect women in particular, not because of any intrinsic differences in their susceptibility, but because of the heavy concentration of women in jobs that involve hazardous processes or working conditions. For example, the repetitive movements of hands and wrists required in predominantly female-occupied jobs such as the garment, electronic, and other light industries, including food service, can cause carpal tunnel syndrome and tenosynovitis. These inflammatory disorders affect hands, wrists, and forearms, and often require surgery. Cashiers and clerical workers may be similarly affected.

Hospital and health care work have been rated as high-risk occupations by the National Institute of Occupational Safety and Health, because these occupations expose workers to a variety of chemicals, sterilizing agents, disinfectants, ionizing radiation, anesthetic gases, radioisotopes, and hepatitis B and other infections. Additional potential hazards include muscle strain from lifting, electric shock from poorly maintained equipment, and high levels of psychological job stress associated with shiftwork. Among the adverse outcomes from these potential dangers are cancer, reproductive problems, kidney and nervous system damage, hypertension, heart disease, gastrointestinal disorders, parasitic infections, hepatitis, and exhaustion.

The largest occupational group of women, clerical workers, face more subtle hazards. Many problems are exacerbated by sudden work place changes brought about by the interface of new automated equipment with the existing physical environment (such as, furniture, illumination, ventilation system, etc.) coupled with increased organizational demands. The resulting psychological job stress and economic problems have been related to the following health outcomes: heart disease, headache, eye, nose, and throat irritation, dermatitis, and visual, musculoskeletal, gastrointestinal, and sleep disorders.

Among blue collar occupations, the approximately 450,000 female textile employees (garment workers, stitchers, and weavers) face a variety of potential hazards besides carpal tunnel syndrome and related tendon diseases. These workers are in daily contact with formaldehyde (BCME), flame retardants, asbestos, cotton dust, dyes, benzidene, cleaning fluids, carbon disulfide, and hazardous equipment. As a result, this group suffers a high relative risk of cancer of the reproductive organs than most more other occupational groups. They are also at high risk for byssinosis (an occupational respiratory disease); cancers of the buccal cavity, breast, and bladder; and numerous accidents.

The jewelry industry, which employs a high proprotion of women, has created a particularly complex and potentially dangerous chemical environment. Many nonstandardized processes performed in work places with high heat in summer and poor ventilation in winter, utilize arsenic, cadmium, mercury, beryllium, lead, silica powder, acids, glues, and organic solvents. The pressure to work very fast while using these substances increases the risk of chemical spills which can result in serious burns. Respiratory diseases and cancer are common among this group. Hair dressers and cosmetologists constitute another group at high risk for cancer, particularly of the uterus. Bladder disorders and respiratory infections can result from exposure to the various dyes, solvents, vinyl chloride, and spray can propellants used by beauticians.

Meat wrapping, performed almost exclusively by females, puts workers at risk for asthma and other respiratory disorders that may result from exposure to the hot plastic wrap fumes. These workers are also more likely to have accidents with knives, saws, machines, and other equipment--some of which may not be well maintained. Other potential hazards are slippery floors and hot grease spills.

The occupations mentioned here are merely examples of the many female-dominated jobs that present serious health threats to women workers.

Exacerbating the physical strain and tension of these jobs may be sexual harassment which has been linked to such symptoms as gastrointestinal disorders, increased consumption of alcohol and tranquilizers, nausea, headache, drastic weight changes, and inability to concentrate.

Special Concerns of Minority Women

Minority groups in the United States were identified by the U.S. Census Bureau in 1980 as American Indian/Alaska Native, Asian/Pacific Islander, Black, and Hispanic. As discussed in the commissioned paper "Special Concerns of Minority Women," there is a great diversity both between and within these minority groups. The Hispanic group includes Puerto Ricans, Cubans, Mexican American, and others; the Asian/Pacific Island group includes 25 subgroups such as Chinese, Japanese, Filipini, Korean, East Indian, Hawaiian, and Samoan; and the American Indian/Alaska Native population includes more than 300 tribes, all with diverse cultures and languages. This diversity is less evident within the Black population, but does exist. Black immigrants from outside the U.S. are increasing, and this group now includes Haitians, Nigerians, Ethiopians, Ghanians, Jamaicans, and other West Indians. In spite of this great diversity, these groups all tend to have less education, poorer housing, and higher unemployment. These factors influence the socioeconomic and health status, both physical and mental, of miority women.

Minority women in the U.S. carry a disproportionate disease burden. Life expectancy is shorter, and there are higher rates of infant and maternal mortality. Minority women have a higher prevalence of chronic diseases such as diabetes, hypertension, cardiovascular disease, and certain types of cancer. Minority women are disadvantged socioeconomically land their health problems are, therefore, influenced by poverty, poor nutrition, low motivation and self-esteem, and adverse or hostile environmental factors (33).

Hispanic women. The U.S. Hispanic population is young, growing, and highly urbanized. It is multiracial, containing Blacks, browns, and Whites. Its attachment to the Spanish language and Hispanic culture is strong. Far from being one homogeneous ethnic group, it is composed of distinct Spanish origin groups, each of them concentrated in a different region of the country. While tied together by a common cultural background, language, and religion, each group presents distinct social and economic profiles.

The most important characteristics of the Hispanic group that relate to the health issues of women are age distribution and low economic status. Hispanics are a much younger population than the general U.S. population, with a median age of 23 years. One-third of its population is under 15 years, and only 4.9 percent are over 65 years of age, compared to 11.3 percent of the general population. Because it is a young and relatively fertile population, and obvious health issue is prenatal and perinatal health care and health care for children. Four factors which have been proven to negatively influence pregnancy outcome--extremes of maternal age, multiparity, low socioeconomic standing, and late-stage prenatal care--are present in larger numbers of pregnant-Hispanic women than in the general U.S. population (34, 35).

Other health problems of this population include infectious and parasitic diseases, diabetes, obesity, anemia, and hypertension.

Asian/Pacific Island women. Asian/Pacific Island Americans are one of the smallest but fastest growing minority groups in the U.S. The special health problems and needs of Asian and Pacific American women are closely related to their recent immigration and disproportionate representation among new immigrants and refugees. Among new immigrants, cultural barriers, including severe language difficulties and unfamiliarity with the health care system, are serious deterrents to health service utilization. For those who attempt to gain access to the system, the lack of cultural sensitivity to their special problems within the system is a grave deterrent. Extreme cultural and language diversity among Asian and Pacific Americans also means that health services and education programs cannot be truly successful unless these differences are addressed.

Because of the relatively small number and recent appearance on the American scene of this population, health policy makers and health care providers may not be familiar with their special needs. The lack of health statistics specific to this group further compounds this problem. Genetic disorders such as alpha and beta thalassemia, other hemoglobinopathies, G-6PD deficiency, and diseases such as hepatitis B and nasopharyngeal, and stomach cancers are very common in certain subgroups of this population. Even in seemingly rather simple matters, such as drug prescription, health care providers, need to know that the dosage prescribed for the majority of Americans may be far too high for many Asian and Pacific Americans. Special modification of certain surgical procedures (as in cataract surgery) may also be necessary because of special anatomical features.

American Indian/Alaska Native women. Although life expectancy at birth has increased 3.9 years (to 75.1 years) between 1970 and 1980, life expectancy for Indian women is still 2.4 years less than for all women in the U.S. Indian mortality rates exceed those of the general population. The leading causes of death for Indian women are heart disease, accidents, cancer, diabetes, chronic liver disease, and cirrhosis. Cervical cancer is rapidly becoming a major health concern within the Indian population. Alcoholism and its effects on the lives of Indian women is a major health problem. In 1980, the alcoholism death rate among Indians was 5.5 times the rate for U.S. (all races). Fetal alcohol syndrome or other fetal alcohol effects related to birth defects due to excessive alcohol consumption during pregnancy may be as high as 38 per 1,000 women of childbearing age, while data for the U.S. population as a whole shows the national rate (estimate) is 1 in 750.

Black women. Of all minority women, Black women are the most vulnerable. From the American historical perspective of slavery grew a strong matriarchal orientation in the family group which still characterizes the Black family today. In the many Black families today, the Black woman continues to be the organizing family member who bears the dual burden of providing nurturing as well as economic support for the family unit.

Disadvantages in education and employment place women in a less competitive position in American society. Health status data available testify to the impact of these socioeconomic forces on Black women and their children. Black infant mortality is twice, and maternal mortality three times that of Whites. Life expectancy of Blacks is six years shorter than that of White. Systemic lupus erythematosus is estimated to be three times more common in Black than in with women. Black women have three times higher rates of high blood pressure, and deaths from hypertensive cardiovascular disease are twice as high for them as for White women. Black teenage fertility is high and the rates of divorce and separation are five times those of Whites. Deaths due to diabetes and cancer are higher in Black women than in White, and four times as many Black women die from homicide as do White women.

Sickle cell disease affects one in 625 Black newborn infants and remains a significant cause of mortality and morbidity for both Black women and men (24, 33, 36).

Summary and Conclusions

Three major objectives should be pursued with regard to the physical health and well-being of women.

- In addition to taking responsibility for their own health through modification of health-destructive behaviors, such as smoking and drug and alcohol abuse, women should adopt practices which enhance well-being, e.g., healthful nutrition and appropriate exercise. To this end, education and outreach programs should be initiated or expanded, or both, through all the public media and all relevant public and private organizations.

- The search for the causes of cancer in women, its treatment and cure must be continued, and simultaneously, education programs should be designed to stress the importance of prevention and early identification of potential malignancies through regular screening, including breast self-examination and "Pap" smear testing.

- Particular efforts should be made to enter into continuing programs of health assistance and counseling to those groups of women who, because of ethnic, social, or economic reasons may be more vulnerable to health risks and receive less adequate health care than others.

In addition to these fundamental objectives, the Task Force proposes that attention be given to the following issues.

- In a society where health care has become increasingly specialized and fragmented, attention should be given to strategies for organizing health service delivery systems that can address the many different health needs of women age 45 and over.

- The search for improved diagnostic and treatment techniques for breast, lung, and other forms of cancer should be intensified. Research directed at smoking cessation and prevention of smoking initiation should be expanded.

- Educational programs should be designed to stress prevention and the importance of early identification of potential malignancies through regular screening, including breast self-examination and "Pap" smear testing.

- Accessibility of diagnostic and treatment services for cancer should be improved, especially in rural and low income areas.

- Research should continue and be expanded to develop new and better contraceptive methods for women and men, with special attention to the development of birth control methods to meet the special needs of handicapped and retarded women.

- Sexually active adolescents should be encouraged to use contraceptives and their access to contraceptive information should be improved.

- Education directed at the prevention of sexually transmitted diseases (STD) should be expanded, especially at school-age level. The consequences of STDs for fertility and childbearing should be stressed. Young women should be taught how to use the health system, and efforts should be made to redsuce their fear of pelvic examinations.

- Diagnostic techniques for herpes and chlamydia trachomatis infections should be improved and availability of screening programs should be expanded.

- Women advised to have a hysterectomy should be encouraged to seek a second opinion before consenting to surgery. Physicians and other health care professionals should attempt to make women feel more comfortable in their decision to seek a second opinion and should weigh other options and discuss these with patients before recommending hysterectomy.

- Efforts toward prevention of unwanted pregnancies should be intensified through improved counseling and contra- ception education programs. This is of particular concern among teenagers.

- Additional research should be conducted on the health and socioeconomic risks and benefits of delaying childbearing until after age 30.

- The availability of genetic counseling and screening services for couples should be improved and expanded.

- Efforts to offer educational services to pregnant adolescents and teenage mothers should be intensified to encourage them to finish high school and learn marketable skills so as to enhance their potential for economic self-sufficiency.

- Large-scale randomized controlled clinical trials should be conducted to assess the safety and efficacy of estrogen replacement therapy in the prevention of osteoporosis.

- Increased publicity should be given, particularly directed to women and physicians, to the findings of the 1984 NIH Consensus Development Conference on Osteoporosis. Special prevention and demonstration programs should be established, instructing women as to how proper nutrition, exercise, and weight control can reduce their chances of developing osteoporosis.

- Studies on the causes and treatment of anorexia nervosa and bulimia should be expanded in light of the growing incidene of these disorders.

- The use of megadose vitamins should be discouraged by educating women as to their hazards and lack of benefit.

- Biomedical research into the causes of early labor and delivery should be intensified.

- The importance of early prenatal care, including nutritional supplements for low income women, should continue to be stressed in public education programs (especially among minority and low income populations), so that high risk pregnancies can be identified early in gestation and the high incidence of premature birth and low birthweight infants can be reduced.

- Health agencies and providers should be encouraged to adopt and implement the recommendations drafted by the 1984 Surgeon General's Workshop on Breastfeeding and Human Lactation.

- When establishing standards for prenatal care, agencies should take into consideration the findings of NIH Consensus Development Conferences on the use of ultrasound, antenatal diagnosis, fetal monitoring, and cesarean childbirth.

- Continued collaboration should be fostered between service delivery and research agencies so that advances in the diagnosis and treatment of perinatal problems can be incorporated into the health care delivery system without undue delay.

- Communication between research and service agencies should be enhanced, especially with regard to the exchange of research findings on early pregnancy losses and family coping strategies.

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Commissioned Paper

Special Health Concerns of Ethnic Minority Women

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Special Health Concerns of Ethnic Minority Women

Introduction

The United States Bureau of the Census in 1980 counted 52,092,248 individuals in the Nation who belong to ethnic minority groups. These individuals comprise 23.1 percent of the total population and include American Indians and Alaskan Natives, Asians and Pacific Islanders, Blacks and Hispanics.

The concept of race as used by the Census Bureau is not based on a clear cut scientific definition of biological stock. Instead, the Census data are based on self-classifications by respondents themselves. In this report, we use the same classifications of respondents to the 1980 Census to address the health issues of ethnic minority women, i.e., American Indians and Alaska Natives, Asians and Pacific Islanders, Blacks and Hispanics. Females in these minority groups number 23,478,866, or 45.1 percent of the total ethnic minority population (1).

Commonalities Among Ethnic Minority Women

Despite the cultural and racial diversity of these minority groups, they share some commonalities that significantly affect their health status. Although there have been improvements in recent years, all of these groups continue to suffer disproportionately from discrimination, unequal access to educational opportunities, unemployment, and social prejudice. These factors affect the quality of life for all ethnic minority groups, and they have an impact not only on the economic status and educational attainments of minorities, but also on their physical and emotional well-being.

Minority women in the United State suffer a disproportionate share of illness. According to all available health indexes and disease prevalence data (2) used to assess the health status of the U.S. population and its subgroups, ethnic minority women experience higher infant and maternal mortality rates; greater prevalence of chronic diseases such as diabetes, hypertension, cardiovascular disease, and certain types of cancer; and a lower life expectancy than their White counterparts.

Some of the health conditions afflicting ethnic minority women, such as cardiovascular disease and hypertension, may well be related to the chronic stress and anxiety associated with their minority status in American society. Socioeconomic disadvantages contribute to the disproportionate frequency and severity of illness among these minority women. In many instances, a health problem in a minority woman is compounded by poverty, poor nutrition, inadequate education, low motivation and self-esteem, and adverse environmental circumstances.

The cultural histories of these ethnic minority groups in the United States also adversely affect their health status by hindering their access to the health care delivery system. For example, many Asians and Pacific Islanders, as newcomers, still cling to their traditional norms and consequently have not aquired basic information on how to acess the health care system (3). American Indians and Alaska Natives, the original Americans who were displaced, and Blacks, who were introduced into American society as slaves, still harbor deep-seated distrust and resentment toward a health care system administered primarily by White males and perceived by many in these groups to be hostile, insensitive and not oriented toward the best interests of minority groups.

In addition to these commonalities among these ethnic minority groups, there are particular issues that apply especially to specific groups. The remainder of this paper focuses on the unique health problems of women in each of these minority groups.

American Indian and Alaska Native Women

There are approximately 500 federally recognized American Indian and Alaska Native groups located throughout the United States (4). The majority of Indian people live primarily on or near reservations and in States designated as traditional Indian country such as Oklahoma and Alaska. Approximately 50 percent of the American Indian population reside in urban communities across the country. While languages, tribal customs, and religious beliefs vary among Indian tribes and Alaska Native groups, maintaining their unique cultures is of critical importance to all of them.

American Indians and Alaska Natives number over 1.6 million. As a group, Indian people are younger than the general population. The median age of American Indians is 22.4 years, compared with 30 years for the general population, and the majority are in the 10-19 age group. Indian families tend to be larger than those in the general population, averaging 4.6 persons compared to the national average of 3.8 (1).

Slightly more than half the total Indian population are women. A recent study reveals that since late 1960, life expectancy has increased 3.9 years for Indian women. Nevertheless, at birth Indian women have a life expectance of 75.1 years compared to 77.5 years for all other women (all races) in the United States (5).

Health Problems of American Indian and Alaska Native Women

Among health issues and problems unique to women in these groups are the following:

Sources of care and health trends. Health services for Indian women are provided by the Indian Health Service (IHS) through its organized system of community hospitals, ambulatory clinics, and Contract Health Services program. Tribal governments are playing an increasing role in the delivery of health services. The migration of Indians to the cities in the early 1950s and the subsequence emergence of the "Urban Indian" has also had an impact on the health status of Indian women. Unfortunately, it has meant trading reservation poverty for urban poverty in an alien environment. As in the general population, Indian women are the primary users of IHS factilities, accessing the health care delivery system both for themselves and their families. According to IHS data (4), the categories of hospital services most often required by Indian women include complications of pregnancy, childbirth, and puerperium. The leading cause of death for Indian women is heart disease, followed by accidents, cancer, liver disease other than cirrhosis, and cirrhosis. Obesity and diabetes continue as major health concerns for Indian women, and cervical cancer is rapidly growing as a major health problem.

A great deal of progress has been made over the past 20 years in decreasing maternal and infant mortality and morbidity. IHS data (4) indicate these decreases since 1955: infant death rate, by 77 percent; maternal death rate, by 86 percent; death rate from pneumonia and influenza, by 73 percent; death rate from tuberculosis, by 94 percent. Major reductions of mortality and morbidity rates have also been made in diabetes, which became a significant health concern in the 1940s and continues to require special emphasis. Despite these improvements, however, Indian infant and maternal mortality and morbidity rates continue to exceed those of the general population (4).

Alcoholism and alcohol abuse. One of the leading health concerns of Indians and Alaska Natives is alcoholism and alcohol abuse. The devastating effects of alcoholism have implications for all aspects of Indian society. The American Indian and Alaska Native age-adjusted alcoholism mortality rate in 1980 was 5.5 times that of the U.S. all races population. Alcoholism rates (1978-1980) for Indian females are lower than for Indian males, 28.0 versus 49.3 deaths per 100,000 population. A dramatic differences, however, exists between Indian females and the U.S. female population. The Indian female population in the age groups 35 to 44 years, 45 to 54 years, and 55 to 64 years experienced alcoholilsm mortality rates during 1978-1980 of 81.8, 100.7, and 62.7 deaths per 100,000 population. These rates were 13.6, 8.5, and 7.3 times that for the U..S. female population in 1979 (6).

Drinking during pregnancy is now recognized as the second leading cause of birth defects in the United States, including not only lesser deformities termed fetal alcohol effects (FAE) but also the constellation of major birth defects known as the fetal alcohol syndrome (FAS). Research underway on the FAS and FAE is revealing the magnitude of these problems in the American Indian community (7).

Preliminary results of IHS-sponsored research show that alcohol abuse and related problems vary greatly throughout the Indian population. Therefore, the incidence of fetal alcohol damage will also vary since the occurrence and degree of damage can be expected to parallel alcohol consumption and abuse. Available data indicate that the rate of American Indian women giving birth to at least one FAS child may vary from 30 per 1,000 women of childblearing age in some tribes to 3 or 4 per 1,000 in other tribes. In the general U.S. population, it is estimated that FAS occurs in 1 to 3 of every 1,000 births (7).

Barriers to health improvements. The environment and economic status of Indians has also affected individual health status and health care practices. Only 20 years ago, many Indian homes were without indoor plumbing, electricity, and adequate sewage disposal. For example, on the Navajo Reservation in 1964, this was the case of three-fourths of the homes. Today, the proportions are reversed; three of every four Navajo homes have these basic health, hygiene, and sanitation necessities. These recent improvements have stimulated major lifestyle changes and have produced significant health benefits for many American Indian and Alaska Native women. Despite many basic environmental improvements, however, there is still much to be done.

Disadvantaged economic conditions continue to play a major role in depressing the health status of American Indian and Alaska Women. Census reports for 1980 show that the percentage of Indians and Alaska Natives living below the poverty level is more than double the percentage in the general population. Indian unemployment rates are twice as high as in the general percent compared to 6.5 percent for women in the general population (1).

Stress: a major cause of ill health among Indian women. Compared to White women, a higher percentage of Indian women are single heads of households and play the dual role of breadwinner and homemaker. Of Indian women 16 years and older, 47.3 percent are in the labor force, compared to 49.6 percent of women in the general population. Indian women often do not have adequate access to education and training programs to prepare them for well-paying jobs. Also, the remote locations of most Indian reservations and a nonexistent reservation economy severely limit employment opportunities and earning potential. The stress Indian women experience by being single heads of household is compounded by a struggle to balance the sometimes conflicting values and beliefs of two very different cultures.

In spite of the many challenges and obstacles often faced by Indian women, many continue to exert a strong influence and a positive impact on Indian society. This is evident from the important accomplishments achieved by Indian women in improving health conditions for themselves, their families, and their communities. In many instances, it has been Indian women who have taken the lead as teachers and health care providers. Natural outlets for the talents of Indian women are careers in the medical and paramedical professions.

American Indian and Alaska Native women are demonstrating their leadership qualities in many fields. There are 65 Indian women who are elected heads of tribal governments. In the newsletter "OHOYO" written for and about American Indian and Alaska Native women, it was noted that one-third of Indian physicians are women, compared to 16 percent in the general population. Women constitute 11 percent of Indian dentists and 28 percent of Indian lawyers, again higher percentages than for the Nation as a whole. The newsletter stated that Indian professional women "tend to bring their skills back home to serve Indian people" on the reservations. In a recent Indian health publication, the conclusion was drawn that "Indian women continued to be primarily motivated out of a sense of responsibility to the community with a goal to serve Indian people" (8).

Asian and Pacific Island Women

Asian and Pacific Islanders are among the fastest growing minorities in the country. According to the 1980 Census, Asians/Pacific Islanders, more than (25 subgroups including Chinese, Filipinos, Japanese, Asian Indians, Koreans, Vietnamese, Hawaiians, Samoans, Guamanians, Burmese, Cambodians, Laotians, Thais, and others) number 3,726,440 and represented 1.6 percent of the U.S. population. To data, more over 700,000 Southeast Asian refugees have settled in the United States; another 52,000 are expected to enter each year in the near future (9).

Between 1970 and 1980, the population of Asian/Pacific Americans increased 142 percent, from 1,538,721 to 3,726,440. Most of this growth is accounted for by the lifting restrictive immigration policies toward these groups in the mid-1960s and the influx of Southeast Asian refugees since 1975. A change in the census definition of Asians also contributed to the increase. The trend of rapid growth is likely to continue (9).

In the 1980 Census, there were 1,925,883 women in the Asian/Pacific Islanders population, representing 51.7 percent of the total. Of the 1,492,586 Asians immigrating between June 1, 1969, and September 31, 1979, 54 percent are females. Among the Southeast Asian refugees who have entered since 1975, approximately 45 percent are females (3, 10, 11).

Health Problems of Asian/Pacific American Women

Health issues and problems unique to Asian/Pacific American women include the following:

Lack of statistical data. Because of their relatively small numbers, Asian/Pacific Americans are not usually identified in health survey data; they are either ignored completely or submerged under the "Others" category. Tragically, health policy makers often equate the lack of data with an absence of health problems and needs in this population.

Disproportionate representation by recent immigrants and refugees. The majority of Asian/Pacific Americans are first generation immigrants, many having arrived only in the last 15 years. Moreover, approximately one of every nine Asian/pacific Americans is a recent refugee. In addition to socioeconomic deprivation, cultural barriers (including severe language problems) and unfamiliarity with the health care system are serious deterrents to health service utilization (3).

Unfamiliarity of health care providers with health problems common among Asian/Pacific Americans. Since Asian/Pacific Americans are relatively new on the American scene and are comparatively small in number, health care providers tend to be unfamiliar with diseases peculiary common to this population as well as with special health care needs related to anatomical or physiological differences between Asian/Pacific Americans and other Americans. For example, many are not aware that genetic disorders such as alpha- and beta-thalassemia, hemoglobin E disease, and glucose-6-phosphate dehydrogenase deficiency, as well as diseases such as hepatitis B and nasopharyngeal and stomach cancer, have a high prevalence in certain subpopulations of this group. The usual dosage of certain medications is often inappropriate for Asian/Pacific Americans and requires adjustment. Similarly, certain surgical procedures may require modification for Asian/Pacific Americans because of anatomical differences from the general U.S. population (11, 12). Health care providers may also overlook the tendency of recent immigrants to rely on folk remedies, some of which are toxic. Cases of lead, arsenic, and mercury poisoning traced to Asian folk remedies have recently been reported. Reliance on folk remedies often also means a delay in seeking modern medical care (13, 14).

Diversity in culture and language. Although collectively labeled Asian/Pacific Americans, this group of minorities is characterized by extreme diversity in language and culture not found in some other minority groups. Such diversity means that health educational materials and services addressing the needs of one subpopulation may not meet the needs of the others.

Bipolar pattern in socioeconomic and health profiles. Asian/Pacific Americans present a bipolar pattern in their socioeconomic and health profiles. The generally favorable status of certain subpopulations is in sharp contrast to a high prevalence of health problems among recent refugees and immigrants. Unfortunately, the highly visible Asian/Pacific Americans with better socioeconomic and health indexes tend to mask the many others in the group who have neither voice nor visibility in society. Language barriers and a cautious attitude in the latter group toward government surveys and investigations means that studies that require voluntary participation are unlikely to include enough data from this group (3).

Black Women

The Black and Afro-American population is the oldest, most stable, and largest ethnic minority group in the United States. Of all minority women, Black women are the most particularly vulnerable. Out of the

American historical institution of slavery grew a strong matriarchial affiliation in the family group which still characterizes many Black families today (15). From the days of slavery, what little family structure existed was organized around the mother. The system of slavery itself discouraged marriage while encouraging high fertility. These factors and the matriarchal family structure are still evident. Black women continue to be called upon to bear the dual burden of economic and nurturing support for the family (15).

The 1990 Census reports the Black population in the United States as 26.5 million, or 11.7 percent of the total, the highest it has been since the late 19th century. Blacks, however, are not newcomers since the first Census in 1790 enumerated 750,000 Blacks 19.3 percent of the population (1).

The status of the U.S. Black population was best described in the 1944 classic, An American Dilemma, by Gunner Myrdal (16). Since the publication of the 1962 edition, the demographic and socioeconomic trends for the U.S. Black population have changed somewhat. There has been some suborganization, and a historical pattern of northern migration has been reversed as more Blacks have moved to the South and the occupational status and educational attainment of many Black Americans have moved closer to those of Whites (15).

Still, the major problems confronting the Black population in the United States remain essentially unchanged. Blacks continue to be socioeconomically disadvantaged; their median family income is 56 percent that of whites, their unemployment rate is twice as high, and their poverty rate is 3.5 times greater. These socioeconomic disadvantages continue to impair the health and well-being of Black families. Black infant mortality is nearly twice that of Whites, life expectancy is six years shorter, teenage fertility remains high, family disruption from divorce and separation has risen faster for Blacks than for Whites, and family disruption by biolence is greater for Blacks than for Whites (15).

The 14 million Black women of the United States represent more than 50 percent of the toal Black population and 12 percent of the total female population of 116.5 million. Black women also account for approximately half of the single parent families among Black families with children (1).

Health problems of Black women

Crisis in Black families. Data from a recent relased report by the National Urban League underscore the crisis fracing Black families (17).

- Black couples are separating at a rate of five times greater than Whites.
- Black males die from accidents and violence at 1.5 times the rate of White males.

- Black men die from homicide at six times the rate of White males.

- More than two million Black men were arrested in 1981, accounting for one-third of all arrests in the Nation.

- Black men have a life expectancy of 65.5 years, compared with 70.5 years for White men.

This crisis in the Black family has considerable impact on the health status of Black women.

Disproportionate disease burden. The disparity between the health status of Black women and White women is revealed by the following statistics (15):

- The incidence of high blood pressurre is three times higher among Black women.

- Death rates from hypertensive cardiovascular disease are twice as high for Black women.

- Systemic lupus erythematosus is said to be three times more common in Black women.

- Black maternal mortality rates are three times higher, and the infant mortality rate is nearly twice as high.

- Death rates from diabetes are 35 percent higher among Black women.

- Four times as many Black women die from homicide. Data are not available on the medical and emotional repercussions of homicide attempts and abuse.

- Teenage birth rates for Blacks remain higher than for Whites.

Health issues unique to Black women. Sickle cell disease, a genetic disorder that affects one in 500 Black newborn infants, continues to be a major health concern for Black women and their children (18). The illness remains a significant cause of mortality and morbidity for both women and men. Although the life span of those affected is increasing as a result of improved treatment, new technology, and greater public awareness, it remains less than for the general U.S. population.

Programs to screen newborns for metabolic diseases such as phenylketonuria and congential hypothyroidism have been established in every State, the District of Columbia, and Puerto Rico. However, only a few States and municipalities have initiated programs to ensure the screening of all newborns at risk for sickle cell disease and related hemoglobinopathies, and only a few pilot projects exist with the capacity to offer prenatal diagnosis and appropriate genetic counseling to couples at risk of having an infant with sickle cell disease or a related hemoglobinopathy.

On a positive note, Black women are increasing their participation in the health professions at a rate faster than any other group in the population. Black women increased from 20.4 percent of Black medical students in 1971-1972 to 44.9 percent in 1983-1984 (19).

Hispanic Women

The 1980 Census reported 14,608,673 Hispanics in the United States, representing 6.4 percent of the population. This Hispanic population is among the fastest growing minority groups in the country; from 1950 to 1980, its population increased by 265 percent, from an estimated 4 million 1950 to 14.6 million in 1980. At an estimated growth rate of 1 million a year, this group could number 47 million by the year 2020 and displace the Black population as the largest minority group. This growth is due to a high fertility rate and rising immigration, both legal and illegal. The high fertility rate is partly attributable to the lower median age of the Hispanic population (1, 20, 21).

It should be recognized that the Hispanic population, through 88 percent urban, is not one homogeneous ethnic group. It is very diverse. This group is composed of individuals who may share a common root language (Spanish) but have different cultural and social backgrounds. The Hispanic population in the United States includes Mexican-Americans (60 percent) concentrated in the Southwest; Puerto Ricans concentrated in New York and New Jersey; Cubans concentrated in Florida; and "Other Hispanic," which includes individuals from some 16 other Latin American countries and Spain, collectively constitutes the second largest group of Hispanics in the United States. The one thing shared by these four Hispanic groups is that all trace their heritage to Spanish-speaking countries (21).

Hispanics lag behind the general U.S. population in occupational status and educatinal attainment and have 2.7 times the poverty rate of U.S. Whites; the average Hispanic family averages 70 pecent of the median income for U.S. families. Their unemployment rate is 40-50 percent higher than the White population's and they have more families headed by females (22, 23, 24).

There are 7,328,842 Hispanic women in the United States, representing approximately 50 percent of the Hispanic population and 6.3 percent of the total female population (20).

Health Problems of Hispanic Women.

As with other population groups, health issues for Hispanic women vary considerably according to geographic location, the number of generations by which a family or individual is separated from the ancetral country, the degree of assimiliation into American society, and educational and economic status.

The most salient characteristics of the Hispanic female population that affect health status are low median age, low income, inadequate education, and traditional family characteristics. The median age of Hispanics in the United States is 23 years, compared to 30 years for the general population. Hispanics average 70 percent of the median family income of U.S. Whites and lag in occupational and educational status. Hispanic families are typically larger than their White counterparts, many have maintained their Spanish language and ties to folk medicine practices, and are predominately Roman Catholic (22, 23, 24). All of these factors affect the accessibility, availability, and acceptablility of health services to this group.

Prenatal and perinatal health. Because Hispanics are a young and relatively fertile population, an obvious health issue of Hispanic women is prenatal and perinatal health care. Little research has been devoted to the investigation of specific perinatal risks for Hispanic women, indeed for any minority women, in the United States. The question of whether there are specific perinatal health risks related to race and ethnicity has not been answered (25).

Current data available on factors influencing pregnancy outcome and births among Hispanics suggest that certain characteristics of Hispanic mothers are closely associated with negative influences on pregnancy outcomes. Four factors that have been identified as having a negative influence on pregnancy outcome (i.e, extremes of maternal age, multiparity, low socioeconomic class, and late stage prenatal care) are present in larger numbers of Hispanic pregnancies than non-Hispanic pregnancies (26).

Obesity and diabetes are more prevalent among Hispanic women. One estimate places the prevalence of obestity (defined as 20 percent or more over desirable weight) among Mexican-American women at 45 percent, compared to 26 percent of Mexican-American men, and 29 percent of all American women. Possibly related to the excess prevalence of obesity is an excess prevalence of diabetes. In one study, 10 percent of Mexican-American women 45 years and older were found to be diabetic, almost three times the national rate of 3.7 percent (27).

Hypertension. Mexican-American women have significantly higher rates of hypertension than non-Hispanics. The prevalence of hypertension in Mexican-American females 60 or older, estimated at 44 percent in one study, is higher than the national average for Blacks and higher than for Mexican-American men (28).

Summary and Conclusions

The nearly 214 million females in the United States who are members o minority groups have more than their share of illness. The socioeconomic disadvantages, discrimination, poor nutrition, and adverse environments experienced by American Indians, Alaska Natives, Asians, Pacific Islanders, Blacks, and Hispanics in our country directly affect the overall physical and emotional health of these populations.

Health statistics show that regardless of which minority group they belong to, ethnic minority women in the United States experience hgiher infant and maternal mortality rates, greater prevalence of chronic diseases including certain types of cancer, and a lower life expectancy than do White women. In addition to these general health liabilities associated with minority group status, certain specific kinds of health problems are over-represented among women in particular minority groups.

Cultural barriers to health care. The Public Health Service (PHS) should provide leadership to identifying and eliminating the cultural barriers to health service utilization through the promotion of awareness and sensitivity to this issue. This effort should include education, training, and service programs. Education on the gravity of cultural barriers to health care access should be directed to the health policy makers, health care providers, and health service consumers. Training programs for health and allied professionals should give special attention to minority women and to ensure equity in their representation. Existing health services need to increase their sensitivity to the issue of cultural barriers and provide bicultural and bilingual services where needed.

Statistical data. The PHS should take the lead by establishing a policy and format for the collection of statistical data on minority population groups, both male and female. This format should be consistent with the 1980 Bureau of the Census data collection classifications which include the American Indian/Alaska Native, Asian/Pacific Islander, Black, and Hispanic population groups.

Health professions. The PHS should take leadership responsibility in addressing the underrepresentation of minorities among health care providers. The PHS should continue to encourage greater participation of minorities, especially minority women, in the public and private health care delivery system. To accomplish this, the PHS should review its health professional training and scholarship assistance programs to ensure that these ethnic minority groups, including the women, are appropriately represented.

Commissioned Paper

Alcohol and Maternal and Fetal Health

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Alcohol and Maternal and Fetal Health

Introduction

Alcohol's adverse effect on the fetus had been suspected well before this century (1). In the mid-1700's, the London College of Physicians successfully petitioned for reinstatement of gin taxes in an attempt to decrease the availability and use of gin by pregnant women and in subsequent years issued many warnings about drinking during pregnancy (1). An English study in the late 1800's noted higher infant mortality and stillbirth rates for the infants of alcoholic mothers and further noted that such women subsequently gave birth to healthy children when forced to become abstinent (2). In this country, a few relevant studies in the early 1900's pointed to fetal damage from prenatal alcohol exposure. Interest in alcohol use in pregnancy, however, apparently declined during prohibition with only sporatic reports in the world literature for the next half century (3).

The modern era of investigation into the effects of alcohol and pregnancy began 11 years ago with the publication in the medical journal Lancet of two papers reporting a specific cluster of abnormalities observed in the offspring of some alcoholic women (4,5). The authors of these papers coined the term fetal alcohol syndrome (FAS) to describe this condition. Over the next 10 years, hundreds of papers appeared on the effect of alcohol in pregnancy, reporting cases of FAS from all over the world (3).

Alcohol effects. From these continuing research efforts, it has become clear that maternal alcohol use during pregnancy can be associated with a broad range of health compromising outcomes for both mother and child. For the fetus, FAS is the most severe of the adverse outcomes; but, FAS comprises only a small percentage of the alcohol affected cases. Other consequences of alcohol use have been termed fetal alcohol effects or alcohol-related birth effects (5). Fetal alcohol effects include, among other outcomes, congenital anomalies and spontaneous abortions. Some fetal alcohol effects do not, in the own right, constitute an adverse outcome but may be independently associated with risk to the mother or fetus. Such effects include amniotic infections during pregnancy, birth-related complications such as premature separation of the placenta, fetal distress, precipitous delivery, pre-term delivery, low birth-weight, and low Apgar risk scores at birth (7). Because these adverse effects are not unique to alcohol use, they can be ascribed to alcohol only after careful study in which the contribution to risk of other factors including smoking, nutrition, other drug use, and maternal illness are controlled and accounted for to the maximum extent possible. Animal studies have been extremely valuable in corroborating findings on fetal alcohol effects, and they will play a major role in future studies elucidating the mechanism(s) by which alcohol exerts its teratogenic effect.

Alcohol use in pregnancy portends risks for maternal health as well as fetal health. Pregnancy in and of itself places additional demands on the woman's physiological system. Some of the demands are for increased levels of essential nutrients obtained through dietary intake (8). The developing fetus will utilize vitamins and other nutrients which would have otherwise been channeled to the woman's tissues. For example, these processes have been well documented in the case of the mineral calcium (9). The fetal demand for calcium decreases the level of the mineral available for the mother's own tissues. This mechanism has been purported to induce calcium-phosphorous imbalance which in turn can underlie problems of poor dentition, muscle spasms, and leg cramps frequently observed in pregnancy. Limited calcium availability contributes to early bone demineralization, a precursor to bone disease in later life (10).

When the further complication of alcohol use is added, a number of maternal health risks become apparent. This is because alcohol, on its own, has profound effects on nutrition. Alcohol is a highly caloric substance, but alcoholic beverages contain few vitamins, minerals, and other essential nutrients (11). The net effect of significant alcohol use is, therefore, a substitution of alcohol for other more nutritious and balanced food sources. Through this mechanism, alcohol is seen to contribute to primary malnutrition. Alcohol, however, is also involved in the development of secondary malnutrition; that is, the undernutrition which arises because of poor absorption of nutrients from the gastrointestinal system, and poor utilization of nutrients. The transport across the intestine of the vitamins, folate and thiamin, and several amino acids is impaired by alcohol (12). Alcohol also contributes to the biodegradation of the active form of vitamin B-6, pyridoxal phosphate. Thus, the nutritional demands of pregnancy, coupled to the adverse effects that significant alcohol use places on nutrition, serve to compromise both maternal and fetal health. Given such risks to the mother, it is perhaps not surprising that a prospective study on pregnancy risk found that women with a history of alcohol abuse were, independent of smoking, two-fold more likely to require a non-delivery hospital admission during pregnancy and to need the services of a high-risk outpatient prenatal care unit (7).

Fetal Alcohol Syndrome (FAS). FAS is the most tragic outcome of a pregnancy complicated by very heavy use of alcohol (14). There are three elements that are necessary for a diagnosis of FAS. These are: growth retardation with a birth weight below 5 lbs. 5 oz.; central nervous system abnormalities, including abnormal neonatal behavior and mental retardation; and, a cluster of unique facial features (6, 14). The faces have under-development of the mid-facial area, small head circumference, small eyes, a sunken nasal bridge, a short up-turned nose with an elongated and under-developed philtrum (the two ridges that run from the base of the nose to the top of the upper lip), an elongated and thin upper lip, and a recessed chin. FAS children frequently have many other problems that extend beyond the diagnostic criteria. They are likely to have heart, kidney, and skeletal defects. The skeletal defects include fusion of cervical vertebra, tapering of the long bones of the fingers and toes, and joint movement limitations (usually elbows and wrists). They have frequent ophthalmologic problems including strabismus, abnormal retinal vasculature, optic nerve atrophy, and severe myopia.

Diagnostic problems, including incomplete expression of FAS at birth and reluctance to diagnose the syndrome, have contributed to difficulty in obtaining accurate estimates of the incidence of FAS. Prospective studies in several different countries including the United States have generally found the incidence of Fetal Alcohol Syndrome ranging between 1 and 3 infants per 1,000 births for the specific population studied (7, 15, 16, 17, 18). This incidence would translate to over 3,000 FAS babies born yearly in this country. Estimates of the frequency of FAS calculated on the basis of occurrence only among women who have been identified as problem drinkers or alcohol abusers are naturally higher, with ranges from 23 to 29 cases per 1,000 births (7, 15, 16).

The incidence of fetal alcohol syndrome, at a minimum, is of the same order of magnitude as Downs Syndrome and spina bifida (19). These three disorders constitute the leading known causes of birth defects associated with mental retardation. FAS, though, is unique among the three in having a known teratogenic origin and in being completely preventable.

As expected, estimates of the frequency of fetal alcohol effects, far exceed the prevalence of the full FAS. Estimates of prevalence as high as 50 to 70 percent among women identified as alcohol abusers have been reported (7). In general, about two-thirds of all developmental defects have been noted to be of unknown origin (20). In one calculation, it has been estimated that about 5 percent of all congenital abnormalities may be attributed to prenatal alcohol exposure, suggesting that alcohol may account for a significant proportion of previously unexplained anomalies and that it should be considered a major contributor to abnormal fetal development (21).

Moderate drinking. While it is undeniable that heavy alcohol use in pregnancy poses a significant risk to the health of the fetus, one debatable issue concerns the potential risk posed by moderate alcohol use. Several studies have reported associations between alcohol consumption at levels of two drinks per day with pregnancy outcomes such as decreased birth weight (22), pre-term delivery (23, 24), and increased spontaneous abortion (25, 26). Other studies have reported an effect upon a variety of neurologic and behavioral measures (27, 28, 29). Some investigators have questioned the validity of these associations (30). An important part of the controversy concerning the effects of low levels of alcohol in pregnancy centers around the reliability of drinking histories obtained in these studies. The debate cannot be resolved with a single answer at this point since the manner in which drinking information was obtained varies considerably from study to study. Those studies that are specifically designed to focus on an alcohol issue are usually more sensitive to the problems surrounding the acquisition of drinking information, and confidence in the drinking data is likely to be higher. A related issue concerns the day to day variation in the normal drinking practices of people. These variations can be considerable, and they can make reduction to a single measure tenuous. As a result, some investigators question whether certain adverse outcomes--for example, increased spontaneous abortion--truly occur at moderate levels of alcohol consumption (30). Animal studies, so valuable for the study of heavy alcohol use in pregnancy, have not yet proved useful to study the effects of moderate alcohol use.

It is of interest that the reproductive years coincide with the years of heaviest average consumption of alcohol by women, peaking in the late 30's or early 40's and declining thereafter (31). Fortunately, there is evidence that pregnancy is often associated with a decrease in the consumption of both alcohol and nicotine, another drug which adversely affects the mother and fetus (32, 33). During the peak reproductive age range of 18 to 34, an estimated 5 percent of American women consume an average of two or more drinks per day (31). Since the level of alcohol in the fetus is almost identical to that of the mother, it is reasonable to conclude that a significant number of unborn children in the United States are exposed to the equivalent of two drinks a day.

Paternal alcohol abuse and fetal risk. Women who drink heavily tend to be married to men who drink heavily (34), and the possibility that some fetal alcohol effects are related to paternal drinking has been examined. Although heavy long-term alcohol consumption by males can have a variety of adverse effects on sexual and reproductive functions (35), there is no convincing evidence to date that such effects are related to fetal alcohol syndrome (36, 37, 38).

Alcoholism and alcohol abuse treatment and prevention efforts for women during pregnancy. It is clear that those women who are alcoholic or who abuse alcohol in pregnancy place themselves and the offspring they carry at significant health risk. Pregnancy is, therefore, an important period for intervention, referral, and treatment of the alcohol-abusing or dependent mother. Preliminary evidence indicates that many women can be motivated to have healthier babies when confronted in a non-threatening and non-guilt provoking manner and can be successfully counseled to abstain from alcohol (39, 40, 41).

Public education efforts concerning the risks associated with alcohol use during pregnancy have been actively pursued since the mid 1970's. Broad coverage in the media has been obtained from public health advisory warnings issued by the National Institute on Alcohol Abuse and Alcoholism (NIAAA), the Surgeon General of the United States, the American Medical Association, the March of Dimes, and by several State governments. Indeed, most Americans have been exposed to such public health messages, and 90 percent of the respondents in a recent survey knew that drinking during pregnancy might be harmful (42). However, fully three-fourths of these respondents who thought abstinence is unnecessary also believed that an average of more than three drinks per day was safe--a belief that is not conclusively established by available scientific evidence. These findings suggest that current public education and prevention programs may not be fully adequate in permeating the public consciousness, and indicate the need for ongoing efforts such as the NIAAA's current FAS education program directed at physicians and other health care professionals.

Although knowledge of potential adverse effects of alcohol and pregnancy outcome has changed, and public attitudes have shifted over the past 10 years, only recently has there been evidence that the drinking behavior of pregnant women is changing. In a recent survey comparing drinking patterns during pregnancy in Seattle over a 6-year period, the proportion of women drinking during pregnancy was found to have decreased, although the proportion of women drinking at least an ounce of absolute alcohol (two drinks) per day was relatively constant (43). Because precisely this limited proportion of the population incurs the highest adverse health risk for themselves and for the fetuses they carry, these findings again indicate cause for concern.

Summary and Conclusion

Successful prevention strategies for alcohol-related birth defects, including FAS, remain elusive. More information is needed about alcohol abuse and dependence in young women so that approaches focused on prevention can be developed. Professional education of physicians, nurses, and other health care providers provides promise of a rational cost-effective approach to prevention of alcohol-related birth defects. Of the many specific questions requiring further research, understanding the mechanism of alcohol's teratogenicity and the variables affecting it, including the timing and amount of alcohol intake during pregnancy, will be crucial to the development of more specific prevention, intervention, and treatment programs. The most frequently asked question at this time has to do with the safety of "moderate" drinking levels during pregnancy. Since there likely are many variables, including genetic ones, which may influence the impact of alcohol on the fetus, a definitive answer to this question is undoubtedly several years away, and recommendations concerning use of small amounts of alcohol during pregnancy in the next few years will have to continue to be based on incomplete knowledge.

Commissioned Paper

Cancer in Women

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Cancer in Women

Introduction

Cancer remains a matter for serious concern among American women, but there is encouraging progress in some areas:

- Almost three-quarters of American women who develop breast cancer--the most common cause of cancer death among women--now live for at least 5 years after diagnosis (1).

- More than one-half of women who develop colon cancer now live for at least 5 years after diagnosis (2).

- Eighty-five percent of women who develop endometrial cancer now live for at least 5 years after diagnosis (2).

- The incidence of cancer of the uterine cervix is continuing to decline among White women (2).

- The incidence of cancer of the ovary is leveling off.

The serious news is about lung cancer, now overtaking breast cancer as the most common cause of cancer death among American women. The death rate per 100,000 women who develop lung cancer is 21.1 for women diagnosed during the years 1978-81, compared with 26.4 for breast cancer. The rising lung cancer death rate is due to increased incidence and lack of effective therapy. This is discussed further in other sections of this report (2).

Another particularly serious aspect of cancer among women is the discrepancy in survival rates between White and Black women in this country. For most cancer sites, survival rates for Black women are lower than for White women. These differences are being studied intensively by the National Cancer Institute (NCI) to see if Blacks and Whites have biologically different forms of cancer, or if the differences result from variations in access to medical care (2).

Breast Cancer. It is clear from Table 1 that breast cancer is still the most frequent cause of cancer for women. But there are significant improvements being made in the diagnosis and treatment of breast cancer--and in breast reconstruction--that are extending survival and improving quality of life for women with this disease.

Table 1.

Incidence (per 100,000) of the major cancers in women
1978 to 1981.

Site	All races	White only	Black only
Breast	84.4	85.6	71.9
Colorectal	43.8	43.6	45.6
Colon	(32.0)	(31.7)	(36.6)
Rectum	(11.8)	(11.9)	(9.0)
Lung	28.1	28.2	30.5
Uterine corpus (endometrium)	24.2	25.1	13.4
Ovary	13.1	13.6	9.5
Uterine cervix	10.0	8.8	20.2

Source: National Cancer Institute Surveillance, Epidemiology, and End Results (SEER) program.

Table 2.

Five-year relative survival rates[1]
for the major cancers in women
1976 to 1981

Site	All races	White only	Black only
Breast	74	75	63
Colon	53	53	49
Rectum	50	50	41
Lung	15	15	16
Uterine corpus (endometrium)	85	86	55
Ovary	38	37	40
Uterine cervix	67	67	63

Source: Data based on National Cancer Institute Surveillance, Epidemiology, and End Results (SEER) program, 1976-1981.

[1] The 5-year relative survival rate is the probability of escaping death from cancer for 5 years after diagnosis. Except for cancers of the breast, prostate, and kidney, the 5-year relative survival rate is an indicator of curability.

In diagnosis, for example, a hormone receptor assay is used to tell if a cancer depends on hormones like estrogen or progesterone for its growth. If it does, hormone therapy may be used to improve the outlook for survival. The presence or absence of hormone receptors may also help to identify high-risk subsets of patients who would require special therapy; this is being studied (3).

The drugs used for chemotherapy of breast cancer have been tested in various combinations and doses so that physicians treating breast cancer now have a bank of anticancer drugs to use for maximum effectiveness and minimum toxicity. The use of monoclonal antibodies is also being studied for future diagnosis and treatment of breast cancer (4).

Surgery for breast cancer is also changing. The once common Halsted radical mastectomy is no longer considered the treatment of choice. Other options--among them, less radical surgery coupled with radiation therapy--are now being tested for their effectiveness in patients having early-stage breast cancer. Chemotherapy given preoperatively is also being studied for its effectiveness against advanced-stage breast cancer (5).

Increasing numbers of women are having breast reconstruction performed by plastic surgeons during or after breast surgery. Although this is a fairly expensive procedure, most medical insurance companies now cover all or part of the costs.

Overall, three-quarters of women diagnosed with breast cancer today can expect to live 5 years or more. The outlook is even better for some groups of women with early-stage breast cancers (1).

Finally, there is some evidence that populations who eat low-fat diets have a lower incidence of breast cancer. Scientists are examining this link to see if some breast cancers and breast cancer recurrences might, therefore, be preventable (6).

Cancer of the Uterine Cervix (Cervical Cancer). Incidence of cancer of the uterine cervix has declined markedly over the past decade and stands now at 8.8 cases per 100,000 among White women and 20.2 among Black women. The 5-year relative survival rates are now 67 for White women and 63 for Black women (2).

Carcinoma in situ (CIS), or noninvasive cancer of the cervix, occurs most often among women aged 24 to 34 and is about 95 percent curable. Its incidence has been rising since the Pap smear came into wide use. The incidence of invasive cervical cancer, which occurs most often among women over age 50, has been declining. (Both the incidence and death rates for invasive cervical cancer dropped by more than 50 percent from 1950 to 1970.) Thus, early detection--by regular physical examination and Pap smears--and treatment appear to be markedly effective against this cancer (6).

The major risk factors for both types of cervical cancer are the same: multiple sex partners and early age at first intercourse. Cervical cancer may also be associated with venereal disease, chiefly genital herpes virus, and papillomavirus. But researchers think that cervical cancer is caused by a number of factors, not just one. The National Cancer Institute (NCI) is conducting a large-scale study of American women to see if the causes of this disease can be delineated more exactly (6).

Treatment for cervical cancer depends on the stage of disease and on the general condition of the patient. In its early stages, cervical cancer is usually treated with surgery or radiation or both. Later stages of the disease may be treated with radiotherapy alone or chemotherapy alone (6).

Finally, studies are under way testing chemopreventive agents against the development of cervical cancer. Some studies have suggested that diets high in vitamin A and carotene may protect against this cancer; other studies have suggested that diets high in vitamin C and folicin, one of the B complex vitamins, may decrease risk (6).

Cancer of the uterine corpus (endometrium). Cancer of the uterine corpus, or endometrium, occurs more often in White women than in Blacks, but its incidence in both races has been dropping over the past decade. Incidence increased in the early 1970's as a result of the use of post-menopausal estrogens. As use of these estrogens slowed, the incidence of endometrial cancer has decreased. The chief risk factors now appear to be obestity, diabetes, infertility, and late menopause. The use of oral contraceptives, on the other hand, appears to lower the risk for endometrial cancer (2).

Treatment for endometrial cancer depends on the patient's general health and on the stage of disease. In its early stages, endometrial cancer is usually treated with surgery, radiotherapy, or both. Hormone therapy is often recommended for later stages of the disease.

The 5-year relative survival rate for White women has been rising over the past several decades. Now, 86 percent can be expected to live for at least 5 years after diagnosis. The survival rate for Black women is much lower, but why this is so is not clear. One explanation may be that Black women are diagnosed only when the disease has progressed to a later stage. There also is speculation that the endometrial cancer among Black women is a more aggressive form of the disease (2).

Cancer of the ovary. Overall, 38 percent of women who develop cancer of the ovary can expect to live 5 years after diagnosis; the survival rate is slightly higher for Black women (40 percent) than for White women (37 percent). This cancer occurs at a rate of 13.6 cases per 100,000 population among White women and 9.5 among Black women. The incidence of this cancer has begun to decline over the past decade (2).

Childbearing and the use of birth control pills--which create a hormonal climate like that found during pregnancy--both appear to confer protection against ovarian cancer.

Surgery to remove one or both ovaries, the fallopian tubes, and the uterus is the primary treatment. Postoperative radiotherapy or chemotherapy may also be given. New blood tests using monoclonal antibodies may improve chances of early diagnosis, and improved methods of staging--to determine extent of disease--are helping physicians to identify groups of patients who will be helped by additional treatment after surgery. New drugs and new ways to adminster them are also being studied.

Colorectal cancers. Cancers of the colon and rectum, taken together, are a major cause of cancer among both men and women. Women develop both of these cancers slightly less often than men. Among women, colon cancer occurs more often among Black women than among White women, and cancer of the rectum occurs slightly less often among Black women. The 5-year relative survival rates for men and women of both races have improved over the past few decades and are now around 50 percent.

Surgery to remove the cancer and some surrounding tissue is still the mainstay of treatment. Some studies suggesting that pre-or postoperative radiotherapy may improve the cure rate are now being evaluated. The use of adjuvant chemotherapy and radiation is also being studied (7).

Summary and Conclusions

Again, there is increasing evidence that diet may play an important part in the development of colorectal cancers. The NCI now recommends that Americans eat more dietary fiber--found in fruits and vegetables such as peas and beans, and whole-grain breads and cereals. Its recommendations are based on the observation that populations that consume large amounts of dietary fiber appear to have less colorectal cancer. There are also some laboratory studies to support these observations. NCI-supported studies are also in progress to investigate the protective effects of a number of other dietary agents, also.

Significant progress in conquering cancer, is being made both through early diagnosis and treatment, and, most importantly, through prevention.

Commissioned Paper

Heart Disease in Women

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Heart Disease in Women

Introduction

Nature and nurture have provided certain health advantages to women as reflected in a late onset of atherosclerotic and hypertensive cardiovascular diseases. Nevertheless, the toll of these major cardiovascular diseases is alarming. Data from the Health Interview Survey, National Center for Health Statistics (NCHS), estimated that in 1981, 38 million American women had diseases of the circulatory system. Ten million women had heart disease including coronary heart disease or heart disease of hypertensive, rheumatic, congenital, or unspecified origin. Over 14 million women had hypertensive disease without heart disease.

Hypertensive cardiovascular disease can result in serious other complications such as stroke and congestive heart failure. During 1980, 100,000 women died from stroke (1). The remaining 14,000,000 women, according to unpublished estimates of the NCHS, had diseases of the circulatory system such as cerebrovascular disease and disorders of the peripheral circulation. Unpublished estimates of the NCHS also indicate that the total annual health expenditure in 1980 for heart disease in women alone was approximately $7.6 billion, or more than twice the size of the entire NIH budget.

Coronary heart disease. Coronary heart disease (CHD) including its manifestations of angina pectoris, myocardial infarction, and sudden death was found to have an annual incidence rate of 31 per 10,000 among women ages 45 to 54, increasing threefold to 95 per 10,000 at ages 55-64 and further increasing to 145 per 10,000 per year at ages 65-74 in the Framingham Heart Study (2). According to unpublished estimates of the NCHS, approximately 2.5 million American women have coronary heart disease and in 1980, a total of 255,000 women died of this disease (3). In addition, according to unpublished estimates of the National Heart, Lung, and Blood Institute, approximately 250,000 first heart attacks occur each year among women. Only 30 percent of women survive an initial heart attack over a 10-year period, whereas 50 percent of men survive an initial attack. In addition, 40 percent of women will develop a second attack within 5 years of the initial heart attack compared to only 10 percent in men (4, 5).

The major risk factors found to be related to coronary heart disease are high blood pressure, elevated plasma cholesterol, and cigarette smoking. Diabetes mellitus, oral contraceptives, and obesity are additional other important contributors to risk.

High blood pressure, manifesting as either elevated systolic or diastolic pressure, has been established as a major risk factor for coronary heart disease in women. National health and nutrition surveys during 1976-1980 found that 20 percent of adult white women and 40 percent of adult black women over the age of 18 were hypertensive. Hypertension was defined, for this purpose, as systolic blood pressure of at least 160 mm Hg or a diastolic measurement of at least 95 mm Hg or current use of antihypertensive medication (1). Women between the ages of 45 and 74 with elevations of systolic or diastolic blood pressure have about twice the risk of developing clinical coronary heart disease as do women at normal ranges of blood pressure (6).

Elevated plasma cholesterol has been established to increase the risk of coronary heart disease in women. Prior to the age of 45, the total cholesterol level in American women averages below 220 mg/dl. Between the ages of 45 and 55, the average cholesterol level of women rises steeply to levels of 240 to 260 mg/dl. NCHS unpublished estimates indicate that women with a cholesterol level over 265 mg/dl have more than twice the risk of developing coronary heart disease as compared with women whose cholesterol level is below 205 mg/dl. According to other unpublished estimates from the NCHS, over 23 percent of adult women in the United States have cholesterol levels over 260 mg/dl. It appears that an elevation of the low density lipoprotein cholesterol fraction may also be associated with CHD in women. High density lipoprotein is inversely related to the risk of heart disease and recent evidence indicates that the ratio of this fraction to total cholesterol may be a better predictor of the risk of heart disease than total cholesterol alone.

Cigarette smoking also increases the risk of cornoary heart disease among women. Women cigarette smokers have from 2-6 times the risk of heart attack as nonsmoking women (7, 8). Over 25 million adult women in the United Staters smoke cigarettes and the rate of decline over the past 15 years has averaged only 5 percent (9). The number of teenage girls who smoke has increased, especially among 17 to 18 year old girls. Some studies show cigarette smoking as the most powerful discriminator between women with nonfatal cases of heart attack and women free of heart disease. This is an area of particular concern because of its health implications.

Diabetes mellitus is an important contributor to coronary heart disease in women. The risk of death is doubled in diabetic women (10). Many also have higher levels of blood pressure and of blood cholesterol than nondiabetic women (11).

Oral contraceptives contribute to the risk of coronary heart disease. Women who use oral contraceptives have a risk of heart attack 4.5 times greater than women who do not use these preparations. However, women who smoke cigarettes and use oral contraceptives are 39 times more likely to have a heart attack (7). The effect of exogenous estrogen use on coronary heart disease in postmenopausal women remains controversial at this time.

Obesity, through its contribution to elevation of plasma cholesterol, elevation of blood pressure, and predisposition to diabetes, is also a risk factor for coronary heart disase in women. Some data are emerging from the long-term followup of women in the Framingham population that suggest that obesity has an independent role as a predictor of coronary heart disease, death from coronary heart disease, and congestive heart failure (12).

Menopause. While not usually considered a risk factor, findings from the Framingham Heart Study indicate that women tend to lose their relative immunity to cardiovascular disease during menopause. Women who have had early natural or surgically induced menopause have twice the risk of developing subsequent coronary heart disease as do women of the same age who have not entered menopause. The increase in cardiovascular disease incidence at menopause is not explained by the changes recorded in any of the usual risk factors, singly or in combination (13).

Special findings. Among women free of coronary heart disease in the Framingham Study, the 20-year incidence of uncomplicated angina pectoris (not contiguous with or following a heart attack) rises with age. Unlike heart attack, the incidence of uncomplicated angina is higher in women than in men after the age of 64 (4). Angina is the most common presenting complaint of coronary heart disease in women with 65 percent of the initial cases exhibiting these symptoms alone. Women who present with angina have three times the risk of a subsequent heart attack compared to those free of angina (14). Survival in younger women (under 60 years) with uncomplicated angina is better than in older women. Within 8 years, 40 percent of older women die after the onset of symptoms (15).

An interesting finding was reported from the Coronary Artery Surgery Study Registry where 6,065 women underwent angiography. At the time of catheterization, 85 percent reported angina pectoris as the predominant symptom. However, of the total women undergoing catheterization, 55 percent had no significant (less than 70 percent narrowing of an artery) arteriographic evidence of coronary heart disease compared to only 12 percent of the men in the study (16). The significance of this finding remains unclear. The Coronary Artery Surgery Study also reported that women have a significantly higher operative mortality following coronary artery bypass graft surgery than men (4.5 vs. 1.8 percent, respectively) (17). This may be due to small coronary arteries, which might lead to technical surgical difficulties, incomplete revascularization, early graft closure, or other factors.

Another recent form of therapy for coronary heart disease is percutaneous transluminal coronary angioplasty (PTCA). With this technique, coronary artery dilation is achieved nonsurgically by passing a special catheter into a narrowed section of a coronary artery, then applying controlled inflation and deflation of a tiny balloon against the atherosclerotic plaque. Data from the NHLBI PTCA Registry showed that women were found to have a risk of in-hospital mortality of 1.8 percent (18). This was significantly higher than the mortality rate (0.7 percent) for men. In addition, women had a lower angiographic and clinical success rate, as well as a higher incidence of complications. Although data demonstrate that women have less favorable results in the acute setting after PTCA, the long-term results in women show improved survival and symptomatic improvement.

Summary and Conclusions

Reduction of coronary heart disease risk factors can be achieved but requires determination, persistence, and long-term changes in behavior patterns. There have been few clinical trials with sufficient numbers of women as participants to establish the association of risk factor reduction with a subsequent incidence of arteriosclerotic and hypertensive disease. Death rates for coronary heart disease in women have declined at least 30 percent over the past 20 years and the decline is much steeper since 1972 (19). Awareness of the major risk factors and their prevention and control is important in reducing coronary heart disease in women.

The American woman is at risk of developing coronary heart disease, which increases substantially with age, particularly if she smokes, has uncontrolled hypertension, and high blood cholesterol. Because coronary heart disease is the leading cause of death in women, with a significant impact on the Nation's medical bill, it is an especially important area for continued and expanded research emphasis. Future research should focus on specific etiologic factors, disease progression, and clinical manifestations in women and provide improved measures for diagnosis, therapy, and prevention.

Commissioned Paper

Immunizations of Special Importance to Women

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Immunizations of Special Importance to Women

Introduction

Immunization policies have been directed generally at the vaccination of all infants, children, and adolescents. While immunization is a routine measure in pediatric practice it is not usually considered as routine by physicians who treat women.

The widespread and successful implementation of childhood immunization programs has markedly reduced the occurrence of many of the vaccine-preventable diseases. However, such childhood immunization campaigns alone will not necessarily eliminate specific disease problems. A substantial proportion of the remaining morbidity and mortality from vaccine-preventable diseases now occurs in older adolescents and adults. Women who escaped natural infection or appropriate immunization with vaccines and toxoids against childhood diseases may be at risk for these diseases and their complications.

Immunization programs are of importance to women throughout their lives. All children require routine immunization against common childhood diseases. During the reproductive years, immunization against rubella should be emphasized in order to prevent the serious consequences of congenital rubella syndrome in offspring. Women who comprise the majority (60 percent) of the population 65 years of age and older are at special risk for such vaccine-preventable diseases, as influenza and pneumococcal pneumonia. In addition, in their role as mothers, women have a special interest and responsibility for ensuring that their children are adequately protected.

Finally, there are special situations in which particular women or their offspring are at increased risk of illness and should be immunized. Women in certain occupations (i.e., hospital and laboratory workers), or environments (i.e., in travel status or in residence outside the United States), or those having special kinds of health problems (i.e., chronic carriers of hepatitis B surface antigen) may be at increased risk of exposure to conditions which can be prevented by immunization.

General considerations and recommendations regarding immunization for all children and adults in the United States are found in the statements of the Immunization Practices Advisory Committee and the American College of Physicians (1-3). This paper will discuss those immunizations of special importance to women.

Rubella (German Measles). Preventing fetal infection and the consequent congenital rubella syndrome (CRS) are the objectives of rubella immunization. Infection occurring during the first trimester of pregnancy can lead to congenital rubella infection by the virus in up to 80 percent of fetuses. In addition, fetal wastage because of spontaneous miscarriage or therapeutic abortion following maternal disease or exposure to rubella during the first trimester remains a frequent occurrence.

The number of reported cases of rubella has decreased steadily from over 56,000 in 1969, the year rubella vaccine was licensed, to 970 in 1983 (4). In 1983 only 9.0 percent of the 3,137 counties in the United States reported cases of rubella. Because of a failure to vaccinate adolescents and young adults effectively, until recently, decreases in reported incidence rates of rubella had been observed primarily in children. Recent efforts to increase vaccine delivery to older persons have led to a current decline in the incidence rate in this age group. However, an estimated 10-15 percent of young women remain susceptible to rubella, and outbreaks continue to be reported in universities, colleges, and certain places of employment--notably hospitals (2).

Vaccination of young children has prevented widespread epidemics of rubella as well as epidemics of CRS and eventually this will lead to the elimination of CRS as vaccinated cohorts enter the childbearing age. However, increased efforts to ensure that all women of childbearing age are vaccinated can hasten the elimination of rubella and CRS in the United States.

A single subcutaneously administered dose of live, attenuated rubella vaccine provides long-term, (probably lifetime) immunity in approximately 95 percent of vaccinees (2). Rubella vaccine is recommended for adults--particularly women--unless proof of immunity is available (documented rubella vaccination on or after the first birthday or a positive serologic test), or unless the vaccine is specifically contraindicated. In particular, susceptible nonpregnant women of child bearing age should receive rubella vaccination (a) during routine outpatient care in internal medicine and gynecological clinics; (b) during routine visits to family planning clinics; (c) following premarital screening; (d) prior to discharge from a hospital for any reason; and (e) after childbirth or abortion. Ideally, every opportunity should be taken to vaccinate susceptible women whenever they have contact with the health care system. In addition, evidence of immunity to rubella should be required for all individuals attending colleges and universities, and in work places and other places where women of childbearing age congregate. All hospital personnel (male and female) who might be at risk of exposure to patients infected with rubella or who might have contact with pregnant patients should be immunized against rubella.

Diptheria and tetanus. Diphtheria and tetanus have decreased dramatically in the United States as a result of the widespread use of specific toxoids; however, the majority of the cases of these diseases reported in the last 5 years have occurred in adults. Of special concern to pregnant women is the prevention of neonatal tetanus which occurs following contamination of the umbilical stump at or following delivery usually as a result of an unattended delivery or one attended by untrained personnel. Immune pregnant women confer temporary protection against tetanus to their infants through transplacental passage of antibody. The results of serologic surveys done since 1977 have indicated that 11 percent of women 18 to 39 years of age and 49 percent to 66 percent of those 60 years of age and older lack protective levels of circulating tetanus antitoxin (2).

All women should have a complete primary series of tetanus and diphtheria toxoids, and those who have completed such a series should receive a booster dose every 10 years. The combined toxoids for adult use, called Td, should be used to enhance protection against both diseases.

Pregnant women not immunized previously against tetanus and diphtheria should receive two doses of Td properly spaced during pregnancy. Those who have received one or two doses of tetanus or diphtheria toxoid previously should complete the primary series during pregnancy, and those who have completed a primary series should receive a booster dose of Td if 10 or more years have lapsed since the last dose. A reasonable precaution to minimize any theoretical concern about possible teratogenicity would be waiting until the second trimester before giving a dose of Td.

Influenza. Influenza A and B viruses cause periodic widespread outbreaks of febrile respiratory illness which under certain circumstances, may be complicated by pneumonia and death. Outbreaks cause significant short-term morbidity and are associated with deaths in excess of the number normally expected. It is estimated that from 1968 to 1983, more than 200,000 excess deaths occurred in association with influenza epidemics. Most influenza-related deaths occur in persons 65 years of age or older, or in chronically ill persons who are at increased risk of influenza-related complications. Such persons are considered to be medically at "high risk" during epidemics. In one recent study, for example, hospitalization rates for adults with "high risk" medical conditions increased during major epidemics by about twofold to fivefold in different age groups, reaching a maximum rate of about 800 excess hospitalizations per 100,000 high-risk persons (5).

Excess deaths from 1968 to 1983 were attributable mainly to influenza A viruses, although influenza B virus epidemics were occasionally implicated as in 1979 to 1980. Because the prevalent influenza viruses may vary annually and because antigenic drifts in specific influenza viruses occur frequently, particularly in influenza A viruses, the formulation of influenza vaccine may be changed from year to year.

Because of the increasing number of elderly women in the U.S. population, and because age and its associated chronic diseases are risk factors for severe influenza illness, the future toll from influenza in women may increase, unless control measures are used more vigorously than in the past. Influenza vaccine is 70 to 90 percent effective in preventing illness in healthy adults less than 65 years old. In recent years, in older persons, particularly in those who reside in nursing homes, efficacy has been on the order of 40 to 60 percent when vaccine strains have been closely related to prevalent strains (6). In spite of the effectiveness of influenza vaccine only an estimated 20 percent of persons in high risk groups are vaccinated in a given year.

Annual immunization with a single dose of the current formulated influenza vaccine is recommended for women who are at increased risk of adverse consequences of influenza infections. Individuals at high risk include all women over 65 years of age and women of any age with chronic pulmonary disorders, renal disease, anemia, heart disease that may alter circulatory dynamics, diabetes or other metabolic diseases or conditions that compromise the immune defense mechanisms. Residents of nursing homes and other chronic care facilities are also at high risk. Investigations of influenza outbreaks in nursing homes have demonstrated that attack rates maybe as high as 60 percent, with case-fatality ratios as high as 30 percent or more (6). Chronic diseases and other debilitating conditions are common among nursing home residents, and spread of infection can often be explosive in such relatively crowded and closed environments.

Vaccination is also recommended for medical-care personnel (especially those who have contact with high risk patients) in order to reduce the spread of influenza to patients in hospitals and other settings.

Pneumococcal disease. Pneumococcal infection is responsible for a substantial number of cases of disease and of deaths in the United States each year. While pneumococcal pneumonia occurs in all age groups, in adults, its incidence increases gradually among those over 40 years of age, with a twofold increase in incidence among those over 60 (2). Mortality from pneumococcal disease is highest in patients who have bacteremia or meningitis, in patients with other underlying medical conditions, and in older persons.

Patients having certain chronic conditions are clearly at increased risk of developing pneumococcal infection as well as experiencing more severe illness when infected. These conditions include sickle cell anemia, multiple myeloma, cirrhosis, renal failure, and splenic dysfunction. Those who have had a splenectomy or an organ transplant are also at increased risk. Other persons who may be at increased risk of developing pneumococcal infection or having more severe illness are alcoholics or diabetics, and those with congestive heart failure, chronic pulmonary disease, or conditions associated with being immunocompromised.

Pneumococcal vaccine contains the 23 serologic types that are responsible for 87 percent of the bacteremic pneumococcal disease in the United States reported to CDC in 1983. Vaccine efficacy is 70 percent for persons over 55 years of age and 77 percent for other patients at moderately increased risk of pneumococcal infection (7). Immunization is recommended for women who are at increased risk of pneumococcal disease and its complications because of underlying health conditions, and for those aged 65 and older, who are otherwise healthy. Providers of health care to women should consider every contact with patients (i.e., office visits, routine nursing home visits, hospitalizations) as an opportunity to offer pneumococcal immunization.

Hepatitis B. The estimated lifetime risk of hepatitis B virus (HBV) infection in the United States is approximately 5 percent for the population as a whole but may approach 100 percent for the highest risk groups (2). Annually an estimated 100,000 symptomatic cases of hepatitis B disease occur leading to approximately 16,000 hospitalizations and 190 fulminant cases of whom three-fourths die (2).

In 1983, 88 percent of the reported hepatitis B cases in which age is known occurred in persons 20 years of age or older (2). Between six and 10 percent of adults with HBV infection become carriers of the virus. In the United States there is a pool of 400,000 to 800,000 carriers of the virus. Chronic active hepatitis occurs in 25 percent of these carriers. Approximately 4,000 persons die of hepatitis B virus-related cirrhosis and 800 of hepatitis B virus-related liver cancer annually in the United States (2).

Immunization is recommended for women at increased risk of occupational, social, family, environmental, or illess-related exposure to hepatitis B virus. These include workers in health-related occupations who have frequent exposure to blood, users of illicit injectable drugs, household and sexual contacts of HBV carriers, residents and staff of institutions for the mentally retarded, hemodialysis patients, and patients who are recipients of factor VIII or IX concentrates. Inmates of certain selected long-term correctional facilities also should be immunized. Use of vaccine should also be considered for a traveler likely to have contact with blood and/or secretions from sexual contact with, members of local populations in areas having a high incidence of endemic disease.

Of special concern to women who are chronic carriers of hepatitis B surface antigen is the possibility of transmitting the virus to their infants. If the mother is positive for both hepatitis B surface antigen and hepatitis "e" antigen, about 80-90 percent of infants will become infected, and up to 90 percent of such infected infants will become chronic carriers (8). The carrier state can be completely asymptomatic, but can lead to chronic liver disease in almost one third of carriers. Cirrhosis and primary hepatocellular carcinoma are closely associated with chronic hepatitis B infection.

Pregnant women who belong to a group known to be at high risk of hepatitis B infection should be tested routinely for hepatitis B surface antigen during prenatal visits. These include women (a) of Asian, Pacific Island, or Alaskan Eskimo descent; (b) born in Haiti or Sub-Saharan Africa; (c) women having a history of acute or chronic liver disease, (d) working or being treated in a hemodialysis unit; (e) working or in residence in an institution for the mentally retarded; (f) rejected as blood donors; (g) receiving blood transfusions on repeated occasions; (h) having frequent occupational exposure to blood in medical or dental settings; (i) having household contact with a hepatitis B carrier or hemodialysis patient; (j) having multiple episodes of venereal disease; and (k) using percutaneous illicit drugs.

Infants born to mothers who are chronic hepatitis B carriers should be treated with hepatitis B immune globulin as soon after birth as possible (preferably within 12 hours) and begin a course of immunization with hepatitis B vaccine within 7 days of birth. This regimen has been shown to be over 90 percent effective in preventing development of the hepatitis B carrier state.

Summary and Conclusions

Public Health authorities and physicians must be cognizant of specific requirements for immunizaton of women of all ages and special programs may have to be designed. Prevention of the infectious diseases discussed above should be an objective for the Nation.

Commissioned Paper

Nutritional Issues in Women

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Nutritional Issues in Women

Introduction

The health of the individual and the population in general is determined by a variety of biologic (genetic), behavioral, sociocultural, and environmental factors. Nutrition is one environmental factor of great importance in determining an individual's level of health and well-being. A person's requirements of nutrients are influenced by genetics, lifestyle, the nature of diet and the homeostatic demands under changing physiological conditions expressed as growth, reproduction, and response to stress, injury or disease.

Major issues related to nutrition and women are: nutrition, exercise, and physical fitness; maternal nutrition during pregnancy and lactation; adolescent nutrition; nutrition of adults; nutrition of the elderly; obesity and its association with diabetes, hypertension, and coronary artery disease; diabetes mellitus; hypertension; coronary artery disease; cancer of the breast and endometrium; osteoporosis; the eating disorders, anorexia nervosa and bulimia; and iron deficiency anemia.

This paper is limited to a discussion of maternal nutrition during pregnancy and lactation and to the subject of obesity which is a major health problem in the U.S. The reader is directed to other papers in this volume for additional information on those topics in which nutrition also plays a significant role.

Maternal nutrition during pregnancy and lactation. It is axiomatic that nature (genes) will not thrive (mature and reproduce) without nurture (diet). Most of the interest on the role of nutritional status of pregnant women has focused on its effects on fetal growth as a measure of fetal nutrition and as a predictor of pregnancy outcome.

The nutritional status of the mother prior to and during her pregnancy is but one of the many important factors that influence fetal growth and, thus, birthweight. Genetic factors, infections, placental abnormalities, toxins, the working environment, maternal obesity, diabetes, toxemia, hypertension, various diseases and conditions, alcohol intake, and smoking in pregnancy are known to influence birthweight and, thus, fetal outcome. Also, any interference with the delivery of nutrients of the fetus or the inability of the fetus to adapt to physiological changes that occur during pregnancy due to congenital defects and chromosomal abnormalities result in fetal malnutrition.

The culmination of fetal growth and the beginning of the postnatal phase are represented by birthweight. The classic study partitioning birthweight variance into its components is that of Penrose (1). He concluded that about 38 percent of the variation between different individual birthweights among surviving infants can be attributed to heredity. Of this, 16 percent was attributed to fetal hereditary factors other than sex, 2 percent to fetal sex, and 20 percent to the maternal hereditary constitution. The remaining 62 percent, constituting the greater part of the variance, was attributable to environmental causes, of which 18 percent was derived from the mother's general health and nutrition, 6 percent from her health during each particular pregnancy, 7 percent from her parity, 1 percent from her age, and the remaining 30 percent was attributable to unknown intrauterine influences. Thus, the contribution of the fetus' own genes in determining its size when it is born is small, and the contribution of maternal factors--both environmental and genetic--is overwhelming.

A large volume of literature exists on malnutrition and brain development and on the relationship of chronic malnutrition in children to cognitive behavior and socialization. A complete bibliography of studies dealing with maternal nutrition and fetal growth is beyond the scope of this paper. A number of books including textbooks of nutrition and pediatrics and symposia have summarized literature and have emphasized the importance of "good" maternal nutrition for normal fetal growth.

Nutrition before and during pregnancy, and possibly the nutritional status of the mother during her growing years, may influence fetal growth. It is generally assumed that a nutritionally excellent diet consumed by the mother during pregnancy is good for the fetus, while a poor diet interfers with fetal growth. Nutritional deficits among pregnant women in developing societies have been related to the greater frequencies of low birthweight infants, whereas food supplementation prior to and during pregnancy increased birthweight.

The ideal diet for the pregnant woman is undefined because ethical considerations preclude the necessary experiments. Thus, estimation of nutritional requirements are based on data obtained from studies of changes in body composition and metabolism; clinical observations measuring changes in total body weight, body water, body density, oxygen consumption, and protein, fat, and minerals (such as calcium, sodium, and potassium) during pregnancy, as well as the assessment of newborn size, body composition, and balance.

Two recent publications by the National Research Council, "Laboratory Indices of Nutritional Status in Pregnancy" and "Maternal and Child Health Research," as well as the 9th Edition of "Recommended Dietary Allowances (1980)" provide up-to-date information on the nutritional needs of pregnant women (2,3,4).

In the United States, the nutrient standards have long been the Recommended Dietary Allowances (RDA). Although these have evolved over the years and have been modified frequently, the basic philosophy has remained the same. It is understood that individuals of similar age, sex, and activity level may have different nutrient needs. Both genetic and environmental factors are presumably involved. The needs of an individual, however, are rarely known. Thus, if an adequate intake of a nutrient is to be assured for all or most individuals, the nutrient standard must be established at the upper end of the range of requirements of the group. The 9th Edition of the National Research Council's RDA (1980) (4) recommends an additional energy intake of 300 calories per day during pregnancy. In addition to increased energy intake of an extra 300 calories/day during pregnancy, the RDA for protein, fat-soluble vitamins (vitamins A, D, and E), water-soluble vitamins (C, thiamine, riboflavin, niacin, B_6, folacin, and B_{12}), and the minerals (calcium, phosphorus, magnesium, zinc, iodine, and iron) are also increased.

The effects of "famine" during the winter of 1944-45 in Holland adversely affected birthweights of babies born during that period. Stein, et al, (5) carried out a detailed retrospective study involving pregnant women from one area which had suffered from famine and two other areas that were unaffected during that period. Their study indicates that prenatal exposure to famine reduced postpartum maternal weight (4.3 percent), birthweight (9 percent), birth length (2.5 percent), head circumference (2.7 percent), and placental weight (15 percent). The effects on the size of the fetus were apparent when the famine occurred in the last trimester. No significant reduction in birthweight occurred when the famine occurred during the first or second trimester. Furthermore, these effects on the size of the fetus were apparent only when the caloric intake was less than the official 1500-calorie ration.

This unfortunate war-time situation, thus, demonstrated that severe nutritional deprivation during pregnancy impairs fetal growth--a phenomenon that has been repeatedly demonstrated in animal experiments. The weight of the babies was 300-400 grams below expected birthweight, and the reduction in fetal length was less than the reduction in fetal weight. The subsequent development of the babies was normal which suggests that though subcutaneous fat was reduced, the development of vital organs had been normal. An important aspect of the study is the definition of a threshold for maternal energy intake being less than 1500 calories/day before any significant decrease in fetal weight was seen. However, the fact that the cognitive abilities of male survivors were unimpaired on a battery of tests indicates that in well-nourished pregnant women severe calorie restriction in the third trimester affects birthweight but not cognition.

Gibbs and Seitchik (6) in their review on Nutrition in Pregnancy state:

> Human fetal or neonatal death or damage resulting from severe calorie and protein deficits is demonstrable from clinical experience. The impact of lesser degrees of nutritional deficit on fetal health is more difficult to identify because of the ability of the mother to provide

> nutrients from catabolism of her own tissues and the ability of the placenta to adapt functionally to an adverse environment.
>
> Successful outcome of the pregnancy may also be determined by the prepregnancy nutritional condition of the mother. Within stable cultures with little immigration, the highest fetal and neonatal losses occurred in women of shortest stature whose fathers had the lowest paying jobs, suggesting that restricted nutrition sufficient to reduce growth in height of the mother during childhood can limit adult reproductive capacity. Women who were lean prior to pregnancy had smaller newborns at term than those who were obese. Although unproved in humans, protein-calorie restriction in animals, particularly rodents, will result in neonates with fewer cells in many organs, particularly the brain, and these animals will manifest learning disabilities if they survive. Contrariwise, the black bear gestates, delivers, and nurtures her cub during a prolonged period of total starvation. Applying the results of animal experiments, particularly those obtained in species where pregnancies are characterized by brief duration and large litters to those of human pregnancy, may be illogical, but the possibility exists that limited nutrition of the fetus resulting from maternal malnutrition may produce permanent neonatal disability. This suggestion alone provides sufficient incentive to provide each pregnant woman with an optimal diet during pregnancy.

The average woman in the United States gains 11 kg during pregnancy. Two important factors need to be considered in giving dietary advice to an individual patient: the degree of obesity or leanness of the expectant mother prior to pregnancy. When compared to women of average weight and average weight gain, lean mothers (less than 110 pounds) who gain little during pregnancy (less than 10 pounds) produce excessive numbers of low-birthweight infants (less than 2,500 g) (7,8).

It also must be pointed out that in the U.S. about 30,000 babies are born every year to adolescent mothers who are 15 years old or younger. In this age group, the prematurity rate is more than twice that experienced by mothers who are 20 to 24 years old. However, it has been found that rates of premature births among girls who are 14 or 15 years old can be reduced with prenatal care and improved nutrient intake. The nutrient needs of an adolescent girl are increased if she becomes pregnant during her growth spurt. More research is needed to define the nutritional needs of the adolescent mother and her fetus.

Several lines of evidence suggest a relationship between vitamin/folate levels and neural tube defect rates. For example, neural tube defects in the United Kingdom are more common in lower social classes in whom diet tends to be poorer. There are also several reports of neural tube defects occurring in the offspring of women using the folate antagonist aminopterin during pregnancy. Finally, retrospective studies of women at the end of pregnancy have shown that those women whose infants had neural tube defects have had lower levels of folate, ascorbic acid, and riboflavin than those with unaffected children (9).

The nutritional status of the mother affects the growth and development of her child, as well as her own health and well-being. Studies are under way on: the relationship of maternal nutritional status to reproductive function; nutritional requirements of women during pregnancy and lactation; the relationship of maternal nutrient intake to fetal outcome and subsequent infant growth and development; placental transport of nutrients from maternal to fetal circulation; the causes of and potential nutritional therapy for intrauterine growth retardation; nutritional requirements during lactation; and the various components of human milk (10).

Priorities for future research in this area include:

- Studies to examine the role of nutrition in reproductive processes with emphasis on certain vitamins and minerals, such as vitamins B_6, E, folate, and zinc, as well as the reproductive consequences of a low-protein diet and the relationship of food resources to reproduction.

- Studies to determine the effects of maternal nutrition and weight gain during pregnancy on fetal growth and development, as well as on neonatal status including perinatal morbidity and mortality, and to define the ideal growth rate in utero.

- Studies to identify the fetus predisposed to intrauterine growth retardation in order that improved procedures for treatment in utero can be developed.

- Studies to determine the nutrient requirements of pregnant women with metabolic disorders such as obesity, hypertension, diabetes mellitus, or inborn errors of metabolism.

- Investigations to examine the manifestations of fetal alcohol syndrome.

- Studies to determine the nutritional needs of the pregnant adolescent and her fetus in order to develop appropriate interventions that prevent the birth of physically or mentally damaged offspring.

Factors that affect lactation and the immune properties of human milk need to be examined in order to establish the best possible conditions for infant feeding. The following studies are of particular relevance:

- Investigations to determine the bioenergetics of lactations.
- Studies to examine the effects of diet, smoking, and alcohol on lactation.
- Studies to obtain additional information about the prevalence and duration of breast feeding in different racial groups with various levels of education in order to develop more effective programs to promote breast feeding.

Obesity. Obesity is associated with hypertension, hyperlipidemia and hypercholesterolemia, and diabetes, and contributes to increased postsurgical infections and complications of pregnancy. In women, obesity is associated with increased risk for cancer of the breast and endometrium.

For many years, it was thought that the morbid effects of overweight and obesity on coronary artery disease were mediated through the risk factors associated with overweight, such as hyperlipidemia, hypertension, and impaired glucose tolerance. However, that this is not the case was shown by a recent analysis of the Framingham Heart Study (based on a 26-year followup) carried out by Hubert, et al (11). The data indicate that obesity, measured by Metropolitan Relative Weight (MRW), is a significant independent predictor of cardiovascular disease (CVD). The data further show that weight gain after the young adult years conveyed an increase risk of CVD in both sexes that could not be attributed either to the initial weight or the levels of the risk factors that may have resulted from weight gain. The authors concluded that "intervention in obesity, in addition to the well established risk factors, appears to be an advisable goal in the primary prevention of CVD."

Garrison, et al showed that the concept of "desirable weight," developed by the Metropolitan Life Insurance Company in 1959 and subsequently distributed in tabular form, is validated by the analyses of the data from the Framingham Heart Study (12). Thus, even those men who were near the average weight (about 20 percent above "desirable weight") showed appreciably elevated mortality. This finding is contrary to the widely held view that moderate overweight carries no increased risk.

In a subsequent analysis of the offspring of the Framingham Heart Study, Hubert, et al stated: "changes in lipoprotein cholesterol (HDL, LDL, VLDL) and blood pressure were observed longitudinally in approximately 700 men and women who were 20 to 29 years of age at entry to the study. Stepwise, linear regression procedures were used to identify characteristics in each sex which were significantly (P .05) associated with these risk factor changes. Quetelet's Index (QI), smoking status, alcohol intake, and their changes, as well as changes in physical activity and, in women, use of oral contraceptives, were considered in all analyses. The characteristic most strongly related to lipoprotein and blood pressure changes in both sexes was change in QI. A unit change in QI (3 kgs), for example, resulted in a change in LDL of about 3 mg/dl in young men. In addition to weight gain, increased cigarette use, decreased alcohol intake, and, in women, going on "the pill" were associated with detrimental changes in lipoprotein profiles during followup. These findings are among the first to offer prospective evidence which suggests that habits developed during young adulthood, particularly those which influence relative weight, have a substantial effect on lipoprotein cholesterol profiles in both men and women (13). The data also indicate that weight gain is the first step in a chain of events that lead to increased morbidity and mortality from cardiovascular disease.

In order to precisely define the health implications of obesity and, thus, begin to formulate the concepts of the relationship between body weight, health, and longevity, and to clarify the terminology used (ideal, desirable, acceptable, MRW), a workshop was held in 1982 sponsored by the NIH Nutrition Coordinating Committee and the Centers for Disease Control. A summary of the workshop was published (14). The workshop concluded that in the United States, below-average weights tend to be associated with the greatest longevity if such weights are not associated with concurrent illness or a history of significant medical impairment. Overweight persons tend to die sooner than average-weight persons, particularly those who are overweight at younger ages. The effect of obesity on mortality is delayed, so that it is not seen in short-term studies. The interpretation of studies on body weight, morbidity, and mortality must carefully consider the definition of obesity used, preexisting illnesses in persons, the length of followup, and any confounding risk factors. The most recent analysis of the Framingham data has shown strong evidence that body weights, in excess of those recommended as desirable by the 1959 Metropolitan Life Insurance Table, are associated with increased mortality (Table 1).

In the U. S., the National Health Examination Survey and the National Health and Nutrition Examination Surveys I and II provide data on weight and height of the population that makes it possible to examine the prevalence of obesity at the time of the surveys. The three surveys have defined "overweight" as being a body mass index (BMI) at or higher than that which obtains at the 85th percentile for men (BMI 28 kg/m^2) and women (BMI 34 $kg/m^{1.5}$) ages 20 to 29 years studied between 1976 and 1980 (15). "Severe overweight" is defined as a BMI (32 kg/m^2 for men and 42 $kg/m^{1.5}$ for women) at or higher than the 95th percentile of the same 20 to 29-year old reference group. The rationale underlying use of the 20 to 29-year old reference population is that young adults are relatively lean and the increase in body weight, which usually occurs as men and women age, is due almost entirely to fat accumulation. It is, of course, well known that the U.S. population at ages 20 to 29, although young is not necessarily lean, therefore, any calculation based on this "rationale," underestimates the prevelance of obesity. Furthermore, the criteria (85th or 95th percentile) are defined statistically; they are not derived from morbidity or mortality experience of the survey population. Thus, by the NHANES BMI criteria, 32.6 million adult Americans are overweight, while 11.5 million are severely overweight. If we calculate the prevalence of obesity, based on the work of Garrison and Hubert, using criteria related to morbidity and mortality from cardiovascular disease, then 80 percent of men and 70 percent of women above the age of 40 years in the Framingham Heart Study are above the desirable weight range (MRW 110 percent; 24.4 kg/m^2) (14). Studies have shown that the weights of the Framingham Heart Study cohort are similar to those in the general population of the U.S.

Table I.
Desirable Weight Ranges--Ages 25 and Over
(Weight, in pounds, without clothing; height without shoes)

Height	Men		Women	
feet-inches no shoes	Weight Range	Weight* MRW=100	Weight Range	Weight* MRW=100
4'9"			90-118	100
4'10"			92-121	103
4'11"			95-124	106
5'0"			98-127	109
5'1"	105-134	117	101-130	112
5'2"	108-137	120	104-134	116
5'3"	111-141	124	107-138	120
5'4"	114-145	126	110-142	124
5'5"	117-149	129	114-146	128
5'6"	121-154	133	118-150	132
5'7"	125-159	138	122-154	136
5'8"	129-163	142	126-159	140
5'9"	133-167	146	130-164	144
5'10"	137-172	150	134-169	148
5'11"	141-177	155		
6'0"	145-182	159		
6'1"	149-187	164		
6'2"	153-192	169		
6'3"	157-197	174		

*Midpoint of medium frame range--used to compute MRW:
MRW = [(Actual weight)/(Midpoint of medium frame range)] x 100

NOTE: For women between the ages of 18-25 years, subtract one pound for each year under 25.

Adapted from the 1959 Metropolitan Desirable Weight Table.

Based on the information at hand, and until further research defines the range of body weight for least morbidity and longest survival, the recommended range of weights should conform to the table based on the 1959 Metropolitan Life Insurance.

It is clear that overweight is a significant problem in our society and that excess body fat (obesity) is associated with many chronic diseases of advancing age, as well as the decreased longevity. Numerous weight control approaches, either self-administration or medically supervised, are available. These include weight-reducing diets (e.g., total fasting, protein sparing modified fasts, novelty diets, nutritionally balanced and unbalanced low-energy diets), increased physical activity, and behavior modification techniques directed at decreasing energy intake and increasing energy expenditure, pharmacotherapy, and surgery. These weight control approaches vary considerably in their effectiveness in decreasing body fat, as well as in their associated health risks which range from mild to severe (sudden death).

In general, the ability of most currently available weight control approaches to sustain weight loss has been disappointing. To successfully lose and maintain body weight without compromising health, weight control efforts should be individualized or tailored to each person and be comprehensive, involving multiple treatment modalities (e.g., diet therapy, physical activity, and behavior modification).

Americans' quest for slimness has led to more than 30,000 methods of weight control and a multibillion dollar diet industry. This proliferation in weight control measures is explained in part by the failure of most currently available programs to result in sustained weight losses. About 95 percent of individuals who lose weight regain it within the first year. Moreover, people tend to seek easy, effortless ways to lose weight, often risking their health in the process. While many individuals are encouraged to loss weight for reasons of health, a vast majority are motivated by cosmetic or aesthetic concerns.

Losing weight and maintaining a significant weight loss cannot be accomplished without a major and permanent change in lifestyle. Special diets of unusual food combinations and other radical measures carry considerable risk and have nothing more to offer. Prevention of obesity and excess body weight undoubtedly is preferable to treatment. However, when treatment is indicated, its risks should be weighed against the hazards of remaining obese or overweight.

Research is underway to examine the genetic, metabolic, clinical, environmental, and behavioral aspects of obesity in animal models; to define the types of obesity; and to establish better methods of prevention and treatment. Studies of the developmental aspects of obesity, its natural history, and its heterogeneous origins attempt to identify determinants of obesity in infancy, childhood, and adolescence.

The degree of overweight, which carries additional risk without affecting mortality, needs to be defined. Overweight, most likely, contributes in varying degrees to morbidity in different societies, since the risk for most common chronic diseases is multifactorial. In defining overweight and obesity, morbidity in addition to mortality, should be taken into consideration.

The familial aggregation of obesity, diabetes mellitus, coronary artery diseases, and high blood pressure means that the offspring of parents (or grandparents) with these conditions may be identified at increased risk of developing these same conditions. Particular care, therefore, should, be taken to ensure that these families do not gain weight in adult life and remain within the range of weights shown in Table I. A sustantial proportion of the population without these familial disorders remain at risk of becoming overweight and developing these conditions.

Obesity or overweight is considered to be one of the major public health and nutrition problems of our time. Indeed, weight control is recognized by the PHS as a national health priority. The specific goals outlined by the PHS call for a significant decrease in the prevalence of overweight among U.S. adults by the year 1990 with emphasis on improved awareness of safe and effective means of losing weight.

Because obesity is a major public health problem, there is need to expand research in this area and to develop the necessary data to define the weight range by sex, age, and height that is associated with the least morbidity and mortality.

Priorities for future research in this area include:

- Studies to consider the metabolic and genetic factors related to obesity; investigations on dietary determinants (nutrients sources, intake, and balance) that affect the metabolism of the adipose cell and its effect, in turn, on appetite; the effect of various physiological and genetic factors on eating behaviors and subsequent weight gain or weight control; the mechanisms by which obesity contributes to the development of diseases such as diabetes, coronary heart disease, hypertension, cancer; and the determinants of genetic or biochemical markers, or both, for the different kinds of obesity.

- Research to examine the role of the central nervous system in the etiology of obesity; studies on the neurophysiology of ingestive behaviors in terms of the neurochemical and neuroanatomical integrations at the level of the neuron and synapse, as well as the neuroanatomical pathways and neurological mechanisms of taste and smell that affect eating behaviors.

- Investigations to elucidate the behavioral, psychological, and developmental factors related to obesity, such as the behavioral, psychological, and social correlates that influence the development and maintenance of overeating and obesity; psychological and social factors that influence weight gain and weight control during infancy, childhood, and adolescence; the attributes of diet, such as nutrient imbalances, or source that promote hyperphagia; behavioral strategies to reduce dietary fat intake and their application to large population groups; the relationship of stress responsiveness to overeating and obesity, as well as the relationship of overeating and obesity to psychiatric illness.

- Studies to examine the effects of overweight or obesity, or both, on health and longevity in order to develop an appropriate data base relating body weight by age, sex, and possibly frame size to morbidity and mortality so as to permit the preparation of reference tables for defining the range of body weight based on morbidity and mortality statistics. Reference data should take into account appropriate attributes (physical activity level, nature of the diet, etc.), as well as possible changes in the attributes.

- New observational studies are needed in order to quantify, in study populations, the relationship of risk factors to morbidity and mortality. In addition, since obesity has been shown to be a significant independent risk factor for cardiovascular disease, there is a need to: investigate the ways in which overweight becomes or acts as a "marker" for premature demise; define the effect of duration of overweight on health in order to ascertain the specific age (how early in life) at which overweight becomes a marker for morbidity and mortality; identify the various types of obesity and that are associated with specific diseases at different stages of the life cycle (e.g., upper trunk obesity with diabetes, fat cell number, and hypertension in early adulthood; and hypertension in middle age).

- Investigations for the prevention and successful treatment measures of obesity; various treatments that need to be examined include the use of hypocaloric regimens, the effects of exercise on metabolism, and subsequent weight loss, behavioral modification therapies, and psychological and psychopharmacological treatment of overeating and obesity. Such treatments need to be examined across the various stages of the life cycle, as well as in terms of their success and safety in maintaining weight loss without provoking or aggravating other medical disorders.

* * *

Commissioned Paper

Premenstrual Syndrome

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Premenstral Syndrome

Introduction

Premenstrual Syndrome (PMS) is a widespread condition defined by physical and psychological symptoms which occur cyclically about 7 to 10 days before menstruation and disappear once menstruation begins. The physical symptoms of PMS include breast tenderness, fatigue, headache, weight gain, water retention and cravings for sweet or salty foods. PMS' psychological symptoms most frequently appear as mood changes, with irritability and depression being among the major complaints. These symptoms may occur alone or in combination and may fluctuate from woman to woman and from month to month in the same woman. While about 40 percent of American women experience some of the symptoms of PMS, only about 5-10 percent--or 3,000,000 - 7,000,000 women--are believed to be severely affected. There is no evidence to indicate that women show any impairment of cognitive or perceptual-motor skills during the premenstrual phase or during any other phase of the menstrual cycle (1).

The consensus among researchers is that PMS is a physiologically based condition that accounts for a variety of physical and psychological symptoms. The way that PMS is perceived is influenced by psychological and socio-cultural factors. Since the etiology of PMS is obscure, it is unclear whether PMS is a syndrome per se, a combination of many different syndromes, or an extreme form of normal premenstrual symptoms. Nonetheless, the fact that PMS symptoms are cyclic and consistent over time supports the view that PMS is a "a major clinical entity" (2).

No standard treatment for PMS exists, yet there is no scarcity of experimental treatment modalities--such as progesterone, vitamin B_6, bromocriptine, diuretics, diet and psychotherapy. Because of the array of physical and psychological symptoms that constitute PMS, some argue that no single treatment will be successful for PMS. On the other hand, if PMS proves to result from a discrete neuroendocrine alteration, a single treatment might be feasible.

PMS was first recognized in the medical literature in 1931 by Dr. Robert T. Frank (3) who carefully described the scope of the syndrome. In addition to describing the diverse symptoms of PMS, he noted that the female suicide rate was highest during the time immediately before menstruation. While many different investigators subsequently studied PMS, it was not until the 1950s and 1960s that PMS became more widely recognized through the work of Dalton (4) in England. Theorizing that

PMS resulted from a deficit of progesterone, she pioneered the use of progesterone therapy. Although some of Dalton's methodology is controversial, there is no question that her commitment to the field captured the scientific and popular imagination.

Diagnosis. PMS is defined by a cluster of symptoms preceding menses which disappear when menstruation begins. The symptoms of PMS are multiple; they vary between women; they vary in severity in the same woman at different times; they may occur at other times during the menstrual cycle, and they may occur in conjuction with other diagnoses. It is obviously difficult, therefore, to determine whether one or more symptoms of PMS actually constitute PMS, are components of other disorders, or are simply benign. Because these diagnostic distinctions are hard to make, PMS research has been replete with conflicting findings regarding etiology and treatment.

However, in the past few years progress has been made in the identification and measurement of PMS. Investigators have developed a variety of questionnaires that depend on patient self-reports. The Menstrual Distress Questionnaire--a method of assessing menstrual cycle symptoms that was developed in 1968 and is still used--covers a number of the PMS symptoms. This questionnaire was modified by Abraham to address PMS (5). On the basis of a 19-item questionnaire, PMS patients are divided into four subgroups characterized by: anxiety and irritability; symptoms of water retention; increased appetite and food cravings; and depressed affect. More recently, a 95-item premenstrual symptom assessment form was developed by Halbreich, Endicott and associates (6).

These scales can be used to define symptoms adequately, assess their intensity, and determine their relation to the menstrual period. Especially important for research is the use of these scaling methods prospectively. This allows assessment of an intermenstrual symptom baseline, discrimination of menstrually related disorders from those which fluctuate throughout the cycle, and consistency and predictability of symptoms (7). Ideally, researchers seek to verify patient self-reports. Many investigators are beginning to develop rigid criteria for inclusion into PMS studies, e.g., women suffering from ongoing affective or personality disorders are excluded.

As progress continues to be made in the diagnosis of PMS, research on its etiology and treatment will become more rigorous and findings more generalizable. Some of the conflicting findings presented below can be expected to be resolved.

Etiology and treatment. None of the numerous theories advanced to explain the etiology of PMS has received conclusive experimental support. Each theory has led to an experimental treatment, and, in turn, the purported success or failure of a treatment has reshaped the theory.

Many results to date have been based on anecdotal information or on poorly controlled, often conflicting, studies of sometimes heterogeneous populations. A further complication is that studies of therapeutic efficacy show a high placebo effect--namely, that women will show some improvement of PMS symptoms no matter what treatment they are given. In fact, it is often asserted that women with mild PMS symptoms get relief from the simple acknowledgement by a physician that PMS is a recognized disorder from which they may be suffering.

What follows is a brief description of a number of research avenues on etiology and treatment, including references to double blind clinical trials. Double blind clinical trials utilize two groups of randomly assigned subjects, an experimental group receiving the treatment matched with a control group receiving a placebo, with neither the investigator nor the subject knowing which group they are in.

Progesterone has been implicated in the etiology of PMS for many years, but after extensive research the role of progesterone is still in dispute. Early theories about PMS pointed to a progesterone deficiency during the the second half (or luteal phase) of the menstrual cycle leading to an altered estrogen/progesterone ratio. This theory was believed to account for the observation that PMS symptoms intensify as progesterone levels decline late in the luteal phase. Conflicting findings have been reported from over 10 different studies as to whether serum progesterone levels are in fact lower among PMS sufferers. This has has led to doubts about the progesterone theory, but others argue that plasma studies are inherently unreliable unless they account for the pulsatile nature of progesterone release.

A number of different controlled trials have been performed on progesterone--administered intramuscularly, by suppository, in an oral micronized form, or in the form of a synthetic progestin. But many of these studies have suffered from methodological problems and the results have been contradictory (2). A large double blind, cross-over (when the study subject receives the experimental treatment and the placebo at different times) trial of progesterone was recently completed by an Australian team headed by Lorraine Dennerstein: Progesterone--in an oral micronized form--was found to be effective in ameliorating PMS. The report of the study has been submitted to the British Medical Journal. In the United States three clinical trials of progesterone are now underway at the National Institute of Mental Health, Vanderbilt University and the University of Southern California Medical Center.

Since cyclic ovarian function is somehow causally related to PMS symptoms, investigators have recently attempted to reversibly eliminate ovarian cyclicity to determine the effects on PMS symptoms. A compound acting like gonadotropin-releasing hormone (a hypothalamic hormone) was given to PMS women--to produce a "medical ovariectomy"--and PMS symptoms were found to be alleviated for the short term of the controlled trial (8). Ovulation and menstruation returned rapidly after the therapy was terminated. The safe and effective use of this therapy for the long term remains to be determined.

Ovarian hormones have also been implicated in the fluid retention symptoms seen in PMS. Diuretics, as a class, are the most widely prescribed treatment for PMS despite the fact that studies have shown that women with PMS do not, on the whole, show significant fluid retention as evidenced by weight gain or an increase in total body water. In the few controlled studies that have been performed using diuretics, there has been no improvement in premenstrual symptoms (9). Ovarian hormones may influence fluid balance by stimulating aldosterone release. Plasma aldosterone levels are elevated during the luteal phase. But women with PMS are no different than other women in the luteal rise of aldosterone. However, the diuretic, spironolactone, which reduces aldosterone levels, has been tried in at least one double blind study with a significant reduction in weight gain and a somewhat unexpected improvement of PMS' psychological symptoms (9).

An excess of the hormone prolactin has also been postulated to play a role in PMS. Despite the fact that studies assessing plasma prolactin levels during the luteal phase have been contradictory, bromocriptine has been prescribed because it reduces prolactin levels. While the results have been mixed for most PMS symptoms, bromocriptine does appear to be effective in relieving breast tenderness. Breast pain and nodularity appear to respond to treatment with Vitamin E, as shown in a recent study of women with benign breast disease who experience PMS symptoms (10).

Another theory about the cause of PMS implicates endogenous opioid peptides in the central nervous system. There is a complex interaction between endogenous opioid peptides, such as B-endorphin, and the levels of progesterone and estrogen. Endogenous opioid peptides are known to be involved in the regulation of mood and behavior. Reid and Yen (2, 11) have hypothesized that PMS might be triggered by excessive exposure to, or withdrawal from, endogenous opioid peptides. In their view, this may be the central event responsible for the constellation of PMS symptoms. This hypothesis is reinforced by the observation of a similarity between narcotic withdrawal and PMS, and by findings which show that blocking endogenous opiates with naloxone in normal volunteers produces a group of symptoms which closely resemble PMS (12). However, studies of B-endorphin levels in plasma (13) and cerebrospinal fluid (14) have not confirmed a premenstrual decline in endogenous opiates in women with PMS.

Vitamin B_6 has been advocated for treatment of PMS since the 1940s. It was originally believed that B_6 would correct an aberrant estrogen metabolism. More recently, administration of vitamin B_6 is thought to augment the synthesis of brain monoamines that are implicated in the expression of mood. Nevertheless, the efficacy of B_6 for treatment of PMS has not been established, although its efficacy for improving depression associated with the use of oral contraceptives has been established in a large double blind study. Since vitamin B_6 can be used safely (as long as doses do not approach toxicity) and without prescription, clinicians now recommend as a first step in treating PMS the use of vitamin B_6 in doses of about 200 mg/day along with improved diet and exercise (15, 16). The specific dietary recommendations include the avoidance of salts and refined sugars during the premenstrual phase along with emphasis on a well-balanced diet.

Psychotherapy and psychoactive drugs have also been used to treat the irritability, anxiety and depression symptoms seen in some women with PMS, especially when stressful events are exacerbating PMS (15). Rose and Abplanalp (17) argue that only a small fraction of the women who enter psychotherapy with premenstral complaints can be diagnosed as having PMS; for most, PMS may be a convenient scapegoat for problems unrelated to PMS. Psychoactive drugs such as lithium and tranquilizing agents have been used to treat symptoms of PMS, but thus far none of these agents has withstood the rigor of controlled clinical trials.

In summary, the panoply of experimental approaches to treat PMS are based on unproven theories as to its etiology. Although many women have experienced some form of relief through one or more of these therapies, health care professionals urge caution in their use and a careful consideration of the risks and benefits of each. Because of the strong consumer interest in PMS, they are also concerned about the commercialization of inadequately tested treatments.

Psychological, social and legal aspects of PMS. The consensus among researchers supports an underlying physiological basis for PMS that contributes to the array of physical, psychological, and behavioral symptoms. What may be often overlooked is that psychological and social factors can influence the expression of PMS symptoms. For example, Ruble (18) has shown that, regardless of the actual time during the cycle, women who are led to believe that they are premenstrual report more PMS-type symptoms than women who are led to believe that they are mid-cycle. Though the interrelationships between biological, psychological and social factors influencing PMS are only beginning to be studied (19), many clinicians report that patients improve when they learn that PMS is an accepted medical entity rather than an uncomfortable aspect of normal womanhood that is best left in the closet. At the same time, feminists are concerned that the recognition of PMS as a clinical entity may lead to discrimination against, or stereotypes about, women. Both in its expression and in its impact, PMS represents a dynamic interaction between physiology, psychology, and culture.

The legal implications of PMS have received enormous attention in the press despite the fact that in only a handful of cases worldwide has PMS been involved. For example, in England PMS was successfully used as a mitigating factor in violent crime. But, PMS is expressed with great variability from one individual to the next and only rarely is it associated with violent and/or uncontrollable behavior. It is expected that PMS will be introduced into various areas of civil law, such as domestic relations and child custody cases, and perhaps into criminal law. The impact of PMS on the responsible behavior of a given individual and its relevance for legal decisions will have to be made on an individual and case by case basis.

Summary and Conclusion

Premenstrual syndrome is a physiologically based condition of unknown etiology that is marked by a cluster of symptoms preceding menses. Although there is as yet no standard treatment, many treatments are being tested. As diagnostic methods are further refined, much progress in treatment research is expected to occur. Interdisciplinary research and training are needed to examine the biological, psychosocial and cultural factors in the development and expression of PMS. Patient education is important to relieve symptoms and to limit the proliferation of untested and often expensive therapies.

Commissioned Paper

Smoking and Women's Health

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Smoking and Women's Health

Introduction

Over 23,000,000 adult women in the United States smoke cigarettes on a daily basis (1). More than 2,000 adolescent females begin smoking in this country every day. Smoking among teenage girls in the U.S. has increased by nearly 800 percent in the past decade (2). At the same time, it is widely known that:

- the incidence of lung cancer among women has increased by more than 250 percent in the past 30 years and will soon surpass breast cancer as the most common primary cancer among women (1, 3);
- cigarette smoking increases the risk of coronary heart disease among women several fold and, among those using oral contraceptives, by a factor of approximately ten;
- there is a sharply rising mortality rate among women due to smoking-related chronic obstructive lung disease (3, 4); and,
- there is an established relationship between smoking during pregnancy and reduced birth weight, spontaneous abortion, sudden infant death syndrome, fetal growth retardation, preterm delivery, and ultimately, the long-term growth, intellectual development, and behavioral development of the child (3, 4).

Many questions arise when these two data sources--one indicating that cigarette smoking continues to be quite prevalent and, in some cases, on the rise among U.S. women, and the other indicating that this behavior often results in severe, life-threatening health consequences for these women and their offspring--are juxtaposed. The most obvious is why, when knowledge of the severe health consequences of smoking are apparently well-known, women continue to initiate and prolong this behavior. Other questions include, why it is that only recently the long-term health consequences for women have become as remarkable as they have been for men for a considerably longer period of time; what the differences are between males and females in regard to factors leading to initiation of smoking and the methods for successful prevention, cessation, and prevention of relapse; what smoking issues are unique to women; and, most importantly, what can be done to aid in reducing the prevalence of cigarette smoking among women and prevent initiation.

The full scope of these questions and the many others related to them certainly cannot be adequately addressed in this brief document; in fact, the 1980 Surgeon General's Report on the health consequences of smoking for women addressed many of these issues and remains the most comprehensive source of information in this area (3). Nevertheless, a brief review of the pattern of smoking in women, its consequences, unique aspects, and relevant psychosocial and behavioral issues will provide an outline for the recommendations which conclude this overview.

Patterns of cigarette smoking among women. As noted above, approximately 23,000,000 American women are regular smokers. This figure represents about 28 percent of adult women in the U.S. (compared to 37 percent of adult males). Just over 20 percent of teenage females are regular smokers (compared to just under 20 percent for teenage males). There are three particularly relevant aspects of these data in regard to smoking in women: (a) Although as Table 1 indicates, the prevalence rates in women never reached the rates for males, the rate of decline in smoking prevalence in women is considerably less than that for men. Since the 1964 Surgeon General's Report, there has been only a 5 percent decline in smoking prevalence rates in females compared to a 14 percent decline among males. The result of this difference in rates of decline may be a convergence of the development of smoking-related disease between males and females in the future. However, there is some evidence that, in the case of cancer, the lower tar cigarettes being smoked today (particularly by women) compared to the tar levels in cigarettes smoked in the past by men may have some attenuating affect. Thus, the previous statement must be couched in conditional terms.

Table 1

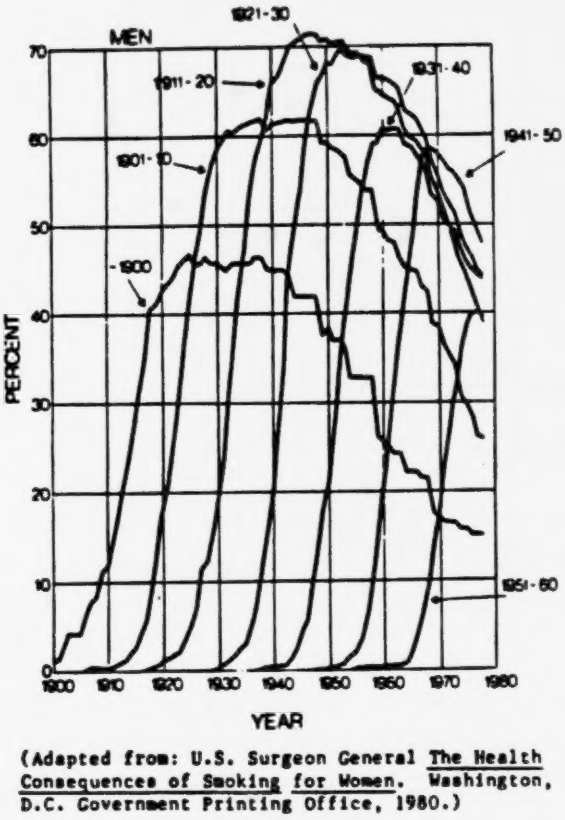
Year	Females	Males
1935	18.1	52.5
1955	24.5	52.6
1965	33.3	51.1
1970	31.1	43.5
1974	31.9	42.7
1976	32.0	41.9
1978	29.9	37.0
1979	28.2	36.9

(Adapted from: U.S. Surgeon General The Health Consequences of Smoking for Women. Washington, D.C.: U.S. Government Printing Office, 1980.)

(b) Charts 2 and 3 compare changes in the prevalence of cigarette smoking among successive birth cohorts of men and women between 1900 and 1978. The most striking factor in these data is that, while the peak prevalence for males occurred among the 1911-1920 birth cohort during the mid-1940's, the peak prevalence for females occurred among the 1931-1940 birth cohort during the mid-1960's. This means that, contrary to previous assertions, women are by no means less susceptible to development of smoking-related diseases than men, but only that they are 20 years behind in the development of such diseases. A further complicating factor in these data is that, among the 1911-1920 birth cohort of males, many began the use of tobacco not with cigarettes but rather with other forms (e.g., pipe, cigar, smokeless). However, the 1931-1940 female cohort virtually began all of its use of tobacco by smoking cigarettes. The ultimate health consequences of these differing initiation patterns are not yet known.

Chart 2

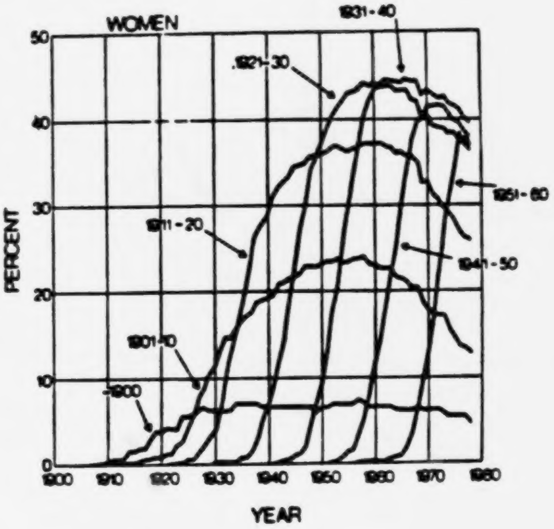
Changes in the prevalence of cigarette smoking among successive birth cohorts of men, 1900-1978



(Adapted from: U.S. Surgeon General The Health Consequences of Smoking for Women. Washington, D.C. Government Printing Office, 1980.)

Chart 3

Changes in the prevalence of cigarette smoking among successive birth cohorts of women, 1900-1978



(Adapted from: U.S. Surgeon General The Health Consequences of Smoking for Women. Washington, D.C. Government Printing Office, 1980.)

(c) Finally, the nearly equal smoking prevalence rates of teenage girls and boys indicate that, among recent birth cohorts, development of smoking-related disease past the year 2000 will be roughly equivalent for males and females, a major change from current experience.

Two other patterns of cigarette use which will require continued monitoring include the greater prevalence of preference for low tar-low nicotine cigarette among females (already referred to above) and the increasing tendency of women to become heavy (i.e., 25+ cigarettes per day) smokers. Both of these patterns of use may portend significant differences in future development of smoking-related diseases among females.

Health consequences of smoking for women. The health consequences of smoking for women constitute a serious and growing problem. Among the many adverse health outcomes identified in the 1980 Surgeon General's Report as being substantially increased among women who smoke are coronary heart disease, including acute myocardial infarction and chronic ischemic heart disease; arteriosclerotic peripheral vascular disease; subarachnoid hemorrhage; severe or malignant hypertension; cancer of the lung, larynx, oral cavity, esophagus, and kidney; chronic obstructive lung disease; chronic bronchitis; decreased pulmonary function; emphysema; and peptic ulcer (3, 4). The breadth and severity of the health problems in this list are not surprising to those familiar with the smoking-related diseases already known to occur in males. That the same diseases are now appearing among women who smoke, however, has been surprising to those who mistook the previously lower incidence of these diseases among females as indicative of a type of immunity to the damaging effects of smoking, rather than as an artifact attributable to the more recent widespread initiation and use of cigarettes by women.

Smoking and cardiovascular disease in women. While young and middle-aged women experience one-fifth the morbidity and mortality from coronary heart disease (CHD) that men do, CHD still represents the major cause of death among women in the United States.

Although the reasons for the apparent protection of the female sex in the pathogenesis of CHD are incompletely understood, cigarette smoking appears to compromise such protection. A number of investigations have shown that the incidence of CHD is far greater in women who smoke than the very low rates observed in nonsmoking women. Furthermore, the incidence of CHD in women who smoke heavily may be similar to that in men.

In women who use oral contraceptives and also smoke, the risk of heart attack is increased approximately tenfold over that in women who neither smoke nor use oral contraceptives.

In addition to CHD, women who smoke have an increased risk of developing other cardiovascular diseases, particularly cerebrovascular disease and arteriosclerotic peripheral vascular disease.

Women smokers are at increased risk for subarachnoid hemorrhage which is further increased in women who both smoke and use oral contraceptives.

The trend in increased tobacco consumption by women over the past 20 years may also have resulted in an increased incidence of arteriosclerotic peripheral vascular disease. Data from the Framingham Heart Study indicate that cigarette smoking is as strong an independent risk factor in women as in men. Cessation of smoking has been found to play in important role in the successful medical and surgical management of peripheral vascular disease patients.

These data suggest that there will be few differences between males and females in the consequences of smoking between males and females in the near future. Additional information suggests that these consequences will be compounded by the severe smoking-related health risks for both mother and child in pregnancy (3).

Issues unique to women. Except for the obvious issue of smoking during pregnancy (and the synergistic risk implicated by the use of oral contraceptives), there does not appear to be physiological differences between men and women that would lead to differential health risks as a result of smoking (3). There are, however, numerous psychosocial, treatment, and behavioral issues which appear to present smoking-related health problems which are unique to women. For example, women in the health professions, particularly nurses, have consistently higher prevalence rates of smoking than do males in these professions; there are gender differences in regard to motivation to start smoking, and smoking cessation and relapse rates differ between males and females; women are special targets of cigarette advertising, with particular attention now being given to promotions aimed at teenage girls; and women in some minority groups such as Hispanics have consistently lower smoking prevalence rates than do men in these groups. This latter statistic could lull the medical community into a false sense of complacency regarding the development of problems in Hispanic women. The fact is that more recent surveys indicate that current Hispanic teenage girls have smoking prevalence rates for smoking equal to or exceeding those for Hispanic males (3, 5, 6).

All of these facts, as well as the constantly changing dynamics of smoking behavior in females, point out the need for increased surveillance of female smoking behavior and, even more importantly, for effective health promotion programs to deal with this program.

Summary and Conclusions

One of the priority objectives in the Public Health Service's "Objectives for the Nation" is that by 1990 at least 85 percent of women should be aware of the special health risks for women who smoke, including the effect on outcome of pregnancy and the excess risk of cardiovascular disease for women who both smoke cigarettes and use oral contraceptives. This type of public awareness effort is essential, especially given the previous belief by the public health community that women were less vulnerable than men to smoking-related diseases (7).

Other issues that should be included in any public awareness effort in this area are the multiplicative effects of heavy smoking which appears to be increasing among women; the possibly neural or even harmful effects of switching to low tar-low nicotine cigarettes which women appear to do with greater frequency than men; and the controversy concerning the effects of passive smoking which may have particular relevance to smoking mothers who spend more time with their children than other family members.

In addition to public awareness efforts, however, more activities directly aimed at preventing or stopping smoking among women will be needed. There is a need specifically to identify those areas in which prevention and/or cessation efforts must be oriented to women as opposed to those activities which can be expected to be equally successful in males or females. An effort to stop pregnant women from smoking is a prime example of this type of activity, but others might include a focus on (a) relapse-avoidance, since women appear to return to smoking for different reasons and at different rates than men; (b) on teenage girls since their motivations for starting to smoke may differ considerably, and those in the 17 to 18 year-old cohort appear to continue to increase smoking; (c) on particular occupational groups, such as nurses that have a distinct concentration of females (3, 5).

In summary, it is strongly recommended that immediate efforts be undertaken to (a) prevent adolescent females from starting to smoke and (b) aid all females who are currently smoking to stop. To begin this task it will be necessary to (a) continue and upgrade ongoing prevention and/or cessation efforts which appear to be equally effective for males and females; (b) identify those areas where prevention-cessation efforts will need to be focused on women, that is, where previous activities or current data suggest that a focus on entire populations is less effective for females; and (c) develop controlled intervention programs having a component of evaluation in order to determine the most effective prevention-cessation activities for women and to involve appropriate groups in the wide promulgation of such interventions.

Commissioned Paper

Systemic Lupus Erythematosus

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Systemic Lupus Erythematosus

Introduction

Systemic lupus erythematosus (also known as lupus or SLE) is a potentially serious, complicated, generalized, inflammatory connective tissue disease that can affect many different organs of the body in varying combinations. The vast majority of patients, about 90 percent, are young women. The disease usually begins in adolescence or in young adult life. Although SLE may start acutely, the course of the disease is usually chronic and undulating with periods of activity alternating with periods of remission.

The most common manifestations of SLE, in order of frequency, are arthritis, fever, a red skin rash (especially in sun-exposed areas), pleurisy, kidney disease, brain involvement, pneumonia, and heart disease. In addition, during periods of active lupus, most patients have blood abnormalities such as anemia, a low white cell count, or a low platelet count, or all of these conditions. Criteria for the classification of SLE have been created, thoroughly tested, recently revised, and found to be useful (1).

Several abnormal proteins (autoantibodies) are found in the serum. Patients with lupus have an extraordinary capacity to produce both common and unusual antibodies. Over 90 percent of lupus patients have SLE cells and antinuclear antibodies. (2).

Antibodies to native DNA and low levels of serum complement in the blood are usually associated with flare ups of lupus and especially, active nephritis.

It is now clear the SLE is much more common than it was thought to be 20 years ago. It is one of the most frequent serious disorders of young women. Several studies have shown that SLE is more common (about three times) in Black women than in White women. An overall prevalence rate of one in 1,000 has been recently reported (1 in 294 for Black women) (3). Moreover, lupus seems to be unusually common in Chinese women according to very recent studies in Hawaii and Malaysia, and observations in the Peoples Republic of China.

As milder cases have been recognized and treatment improved, the outlook has improved greatly, but deaths still do occur and better treatment is needed.

Research on SLE is supported by several institutes at the National Institutes of Health (NIH). The National Institute of Arthritis, Diabetes, Digestive, and Kidney Diseases is the first and the National Institute of Allergy and Infectious Diseases the second among these in terms of the amount of grant support for lupus research performed in our medical centers all over the country and in carrying out intramural research on SLE at the NIH Clinical Center in Bethesda, Maryland (4).

There is no area of connective tissue disease research during the past decade that has engendered more interest than has the study of SLE. In addition to studies in men, excellent experimental models of SLE have been developed (and then produced for research purposes) in certain inbred strains of New Zealand and American mice. These mice predictably develop SLE cells, lupus nephritis, and anemia at 5 to 6 months of age. Research in SLE has been very active and, as a result, new concepts of the nature of lupus have been formulated and subjected to critical testing.

High titers of antibody to DNA were found in the serum of patients with SLE. Studies using sophisticated techniques demonstrated that DNA and its antibody were being deposited at the site of kidney injury. During intense flare ups of the disease, it was also shown that these DNA antibodies were being consumed by the kidney tissue as it was injured. The final proof of this immune complex deposition as the cause of renal injury was the demonstration that high concentrations of DNA could be extracted from the kidneys of patients with active lupus nephritis. Improved methods are being developed for detecting these circulating immune complexes of DNA and its antibodies. It has been recently shown that patients with SLE clear these immune complexes from the blood more slowly than do normal persons and that there is a specific defect in blood receptors for clearing such complexes in lupus patients. In addition to anti-DNA antibodies, several other antibodies of potential importance such as anti-RNA, anti-Ro, and lymphocytoxic antibodies have been discovered in patients with SLE (5).

That genetic forces play an important role is clear in view of the experimental animal models in which SLE develops regularly and spontaneously in certain inbred strains of mice. There is a moderate tendency for lupus to occur in more than one family member. All combinations have been reported (6). Even father and son combinations have been reported in spite of the fact that SLE is largely a disease of women. Among SLE patients there seem to be excessive numbers of certain tissue-types or genetic markers, namely HLA-A1, HLA-B8, DW2, and DW3. Although in studies of identical twins both members may have (are concordant for) SLE, there have been some reports of discordance, one twin having SLE and the other identical twin not having it. This indicates that there are also important environmental factors, as yet undiscovered, in the causation of SLE.

Great interest was aroused 10 years ago when "virus-like particles" were seen under the electron microscope in the kidneys, spleen, and skin of patients with SLE. However, viruses could not be grown from tissues showing these particles. Careful studies then showed that these "virus-like particles" were really glycoproteins and not viruses. Recently, however, high blood levels of interferon have been discovered in patients with lupus. Whether this interferon indicates a viral infection, or alternatively is serving as an immune regulator, needs to be clarified.

Most exciting advances have been made in the area of cell-mediated immunity. It was shown by NIH scientists that a specific type of lymphocyte (suppressor-T-lymphocytes), which normally keeps antibody formation in check, was deficient in SLE. By extracting a substance (SRS) from these cells and giving this substance to very young New Zealand mice, the subsequent development of SLE in these mice was impeded. The therapeutic implications of this discovery are hopeful.

Equally exciting has been new information on sex hormones in SLE that could explain the high preponderance of SLE in women in the childbearing age group. Detailed studies in New Zealand mice that involved the removal of sex hormone-producing organs and the subsequent administration of sex hormones have interestingly shown that male hormones (androgens) delay the emergence of SLE, and female hormones (estrogens) accelerate the development of SLE in the mice. Moreover, recent studies in lupus patients have revealed that women with SLE have an abnormality of estrogen metabolism leading to chronic estrogenic stimulation. Interestingly, men with lupus also have this estrogen abnormality. In addition, low levels of androgens have been found in women with SLE. Moreover, initial results from treating women with a synthetic androgen (Nandrolone) have been promising. This opens up the whole question of sex hormones and the immune response, an area which needs to be inestigated thoroughly.

In the past, it has been postulated that SLE may be precipitated by, and be a reaction to, certain drugs or foreign proteins, and that this might explain the great increase in the incidence of SLE over the past two decades. Two studies have now clearly shown that patients with SLE are no more sensitive to penicillin than are normal persons. Moreover, several groups doing lupus research took advantage of the opportunity provided in 1976 to study the influence of immunization (in this case, swine flu immunization) on possible activation of SLE. In several reports, fortunately, SLE patients were shown to form protective antibody satisfactorily and no flare ups of SLE were produced by immunization.

The vast majority of SLE patients are treated with corticosteroids (prednisone and other agents). Most observers are now convinced that these agents have reduced mortality and prolonged life in SLE patients. Many investigators have directed their attention to refinements of steroid therapy in order to minimize long-term toxicity. Giving prednisone at 24-hour or even 48-hour intervals has kept the SLE under control and reduced the side reactions in many, but not all, SLE patients. For patients with persistent severe and active disease, very large doses given infrequency have been recently shown to be effective.

Great hopes for alternative forms of therapy were provided by the initial reports in the 1970's of the efficacy of the immunosuppressive agents (azathioprine and cyclophosphamide) in lupus nephritis. In addition, extensive detailed studies carried out with these agents in the New Zealand mice (with lupus) showed them to be effective. Since then there have also been numerous well-controlled clinical trials with these drugs in lupus patients, and some of the recent results have been encouraging. The benefits over those obtained with corticosteroids have often been counterbalanced by serious side effects from these immunosuppressive agents. Plasmapheresis ("cleansing" of the blood) is now being actively investigated by a multi-centered trial performed by a national group of leading nephrologists. New effective and safe drugs are still sorely needed.

Summary and Conclusions

In general, however, the outlook for lupus patients has improved considerably. In 1955, the average survivorship was 50 percent after 4-years. At present, over 95 percent of SLE patients survive 5-years after diagnosis and over 80 percent survive 15-years after diagnosis. This improved prognosis applies both to children and to adults.

Research scientists at the NIH and in our medical schools are continuing their investigations into the many interesting immunologic, genetic, and hormonal factors that may lead to finding the cause of lupus and are exploring new approaches to treatment.

Chapter Three

Health Concerns of Older Women

Introduction

As the population ages, the health maintenance of older women (65 and over) should receive greater attention from public policy makers and health planners, because women, more than men, are often surviving to old age. At this time they will be at significant risk for multiple diseases and ultimately, many require government assistance of one form or another.

There has been increased interest in recent years in the phenomenon called the "graying of America." As more statistical data accumulate, it becomes obvious that future populations over the age of 65 should be of concern to us now, because this segment continues to increase both in absolute numbers and as a percentage of the total population. The National Institute on Aging refers to this as a demographic revolution and states that we do not have the social institutions, medical care system, employment policies, or nursing homes that are needed to respond to this challenge (1).

Data from the most recent U.S. Census describe the current and projected figures for the number of persons over the age of 65. For example, in 1982, 11.7 percent (26,800,000) of the population was age 65 and older; by 2030, this percentage is expected to almost double to about 20 percent (64,300,000). While the total U.S. population is expected to increase 33 percent between 1982 and 2050, the population of persons over the age of 55 is expected to increase 113 percent.

One of the fastest growing sub-populations of the elderly is that of persons 85 years of age and older. In 1982, 1 percent of the population belonged to this age group. The projected population over 85 in 2050 is expected to increase dramatically to more than 5 percent of the total population. According to Reinhardt and Quinn (2a) "this is indeed a remarkable and social achievement, but one with extensive consequences for our country". It is clear from these data that the population of older Americans will be a significant force in the future.

Women will comprise a large portion of that aging population. Recent census figures indicate that older women outnumber older men for each age category over 55 years. In 1962, for example, women outnumbered men 5 to 4, while in 1982, this ratio increased to 3 to 2. This significant difference is further illustrated when life expectancy after 65 years is plotted. In fact, as of 1982, of the 32,000 persons over the age of 100, 60 percent were women. (By the year 2035, there will be 525,000 persons over 100, with 430,000 of those women). It is interesting to note that while life expectancy for older Black females is less than for their White counterparts, Black females show a similar increase in life expectancy compared to the male members of their race.

It is clear that as the expected increase in the number of older Americans becomes a reality, the multitude of health concerns that are associated with older women will intensify. It is tempting to combine a myriad of physical and mental problems as concerns faced by the "older woman". However, the population of women over the age of 65 is as diverse in its constitution as is any other cohort group. Health issues within this population vary among women of different ethnic and socioeconomic backgrounds, as well as within specific subgroups of the over-65 population. As a confounding factor, chronological age in a woman is not necessarily an indicator of biological age (two 70 year old women may age differently). In addition, the 65-74 year old woman may face health difficulties different from those of her counterpart in the 75-84 year old range or even by a woman in the over-85 age range. All of these health concerns may differ from those that men over the age of 65 encounter.

As mentioned above, there are many elements which need to be considered before a health care assessment can be developed for older women. For the purposes of this report 65 has been used as the start of old age simply because many of the Federally sponsored programs use that age as an entry point. Obviously, other definitions could have been used.

Scientists at the Second Conference on the Epidemiology of Aging, sponsored by the Public Health Service (PHS) in 1977, discussed various concepts of what aging really is and concluded, not surprisingly, that the phenomenon is complex and multidisciplinary in nature. The process of aging can be viewed from a biological and cellular perspective (including changes in immune response and response to other physiological challenges such as drugs or nutrients) (3). Alternatively, aging can be measured in functional terms (4).

As scientists strive to elucidate the common threads linking the complex components of the aging process, they are also beginning to understand the many diverse factors which affect this process: biologic, social, economic, ecologic, and psychologic. In devising a health strategy for the older woman, it is critical, therefore, to consider the interplay of all these factors. It is equally important to plan for the health needs of tomorrow's older woman (today's younger woman) by carefully identifying and observing the possible effectors of her health today. (See Chapter Two--Womens Physical Health and Well-Being). The PHS mandate for disease prevention and health promotion requires a broad-based approach: viewing physical and mental health in context with the prevailing social factors as well as striving to improve the health status of all age groups in order to lay the foundation for good health in the future.

The PHS prevention objectives for the year 1990 identify areas of importance for women of all ages. Achieving the desired goals for these objectives will enhance the health status of both today's older women and those of the future (today's younger cohorts). Some of the important issues relevant to today's older women are reduced risk factors and improved services and information for: hypertension, toxic agents, smoking, alcohol and drug misuse, nutrition, physical fitness and exercise, stress, and control of violent behavior. While the PHS is committed to improving and preserving the good health status of American women through these prevention objectives, it is of critical importance that women themselves become more knowledgeable about their own health status and more active in improving or safe-guarding it or both.

This chapter will deal in large part with many of the health problems that are more prevalent in, more serious in, particular to, or having more severe consequences for older women. However, it is also important to realize that the majority of older women are healthy and lead active lives well into very old age.

The key to good health in older persons is a combination of successful health promotion efforts throughout life coupled with a better understanding of how numerous factors (especially, mental, physical, and psychosocial) contribute to the maintenance of this health status.

Social Factors

The process of aging involves transitions in many different aspects of a woman's life. How a woman copes with these changes depends not only upon her own personality and concept of herself but also on the type of personal support systems available to her (economic, medical, social, religious etc). This section will describe some of the psychosocial factors which are inextricably tied to the mental and physical health of the older woman.

Demography. Almost two-thirds of the elderly lived in metropolitan areas in 1981 and of that group, just over half lived outside the central city. While the elderly are more likely to live in metropolitan areas, Blacks and Hispanics are more likely to concentrate in the central city while Whites tend to be surburban residents. Almost 45 percent of the nonmetropolitan elderly live in the South while the Northeast and West have only about 25 percent.

Seven states in 1980 reported having more than 1,000,000 persons 65 years of age and older. California (2,400,000), New York (2,200,000), Florida (1,700,000), Pennsylvania (1,500,000), Texas (1,400,000), Illinois (1,300,000), and Ohio (1,200,000). Florida is the state with the largest percentage of its population over 65 years of age. Arizona, Florida, and Nevada more than doubled the size of their very old populations within the past decade. Estimates of net migration between 1970 and 1980 show the movement of elderly persons away from the Middle Atlantic States and the East and Northcentral States into retirement areas, rural areas or small towns in the South and West. For persons age 75 and over, migration was influenced by factors such as medical care, decreased physical mobility, widowhood, and the wish to be near family. Of the group 65 years of age and over, nonmarried persons were more likely to move than were married persons.

While migration or major moves provide many benefits for the older person (perhaps improved weather, housing, economic status), this process may also present changes that require some adjustment. Transitions may occur in life style (from a large home to a small "condo"), with regard to family (toward or away from) and friends (loss of old friends, making new ones), or from an urban to a rural setting. Moves can also include: home to nursing home or hospital, home to retirement community, or even loss of a home through economic misfortune.

In summary, major moves can affect both the mental and physical status of the older woman in both positive and negative ways.

Family and personal relationships. Perhaps the most difficult transitions an older women may have to make is from being married and an important part of a family, to living alone. While it is documented that the majority of Americans marry, the differences in marital status of men and women are most pronounced at either end of the age continuum. At the upper end, women are less likley to be married than men. In both 1950 and 1980 about half of the women over 65 were widowed (5). Additionally, in 1980, approximately 9 percent of women aged 65 and older had never married. Of the over 7,000,000 elderly persons living alone in 1982 (about 30 percent of the total elderly population) most were women. Two-fifths of all elderly women lived alone and of those over 75 years of age, half of these lived alone.

Older women with families tend to have relationships with their children which are both significant and lasting. In 1975 over half of the women over 65 years of age with surviving children lived within a ten minute or less drive from one of them and either talked or visited with their children several times a week. Thus, a family structure, even in the absence of a husband, continues to play an important role in maintaining the social equilibrium of older women.

These close personal relationships are important in enhancing the quality of life for older women. Studies indicate that there is a correlation between available social support (especially through a family member) and the incidence of illness or the ability to cope with illness. It is important to note that nearly one-fourth of the women turning 70 have no surviving children and consequently must rely on other groups for social support. In addition, today's younger working women who choose not to marry or have a family, may face simillar problems in old age in the future.

In her relationships with the family, the female characteristically has been referred to as the "kin keeper", that is, the family member responsible for maintaining close ties with family and friends. The impact of the loss of this role for the woman as she loses family or friends through death or moving away is not clearly understood nor is the precise social support role played by the family and friends. A change in the role of kin-keeper can have other consequences as well. With increasing longevity, many women over 65 years of age must assume the dual responsibility of grandmother and kin keeper for elderly parents or relatives. The physical, emotional, and economic strain that this places on the older woman can be tremendous, especially if she herself has no support.

Housing. Transitions in the family structure of the older woman may also result in changes in her housing arrangements. A recent report by the World Congress on Aging (6a) enumerated some of these concerns:

- The high cost of new or renovated buildings.
- The growing numbers of elderly who retain the family home but are "cash poor".
- The numbers of elderly living in substandard housing.
- The increasing number of elderly who need a variety of support services to remain independent.
- The lack of providers of housing and services for the frail elderly in the public and private sectors.

An elderly woman living alone may have difficulty in maintaining the family home (both physically or financially or both) and may be forced to move without the assurance she will be able to find housing she can afford. According to the World Congress on Aging Report, "the National Council of Senior Citizens estimates that those 75 years and older pay more than 45 percent of their budgets for housing alone" (6a).

Thus, the older woman may have to grapple with the stresses and financial difficulties of maintaining a home or finding a different living arrangement. Housing alternatives (each providing advantages and disadvantages) include: living with a family member, renting out part of the home, joining a group residence or special housing community for the elderly, etcetera. As a person ages, these housing needs might also continue to change.

Violence, abuse, and crime. A recent study (7) reports that 500,000 to 2,500,000 elderly are abused in the United States. The abused elderly person is characteristically a widowed female in her mid-seventies with an income of less than $500 a month. The abused tend to have some chronic illness and a high incidence of dependency and thus remain trapped in a terrible situation. Abusers are most often a married son or daughter who seldom had a support system available for help in caring for the elderly mother. While neglect is the most common form of abuse, material abuse and physical and psychological abuse as well as violation of rights were frequently reported.

Fear of violence and crime can also create a devastating cycle for the older woman. An older woman who lives alone and is fearful of crime may curtail many of her social activities, or even activities vital to her life (grocery shopping, physican visits, etc). This, in turn, may lead to or aggravate, physical illness or depression or both as these conditions often go untreated.

Unfortunately, many of the negative stereotypes of the fragile older woman as an easy victim for violent crime or abuse still exist and need to be dispelled. More older women are learning how to assert themselves and protect themselves from such crimes.

Education. In 1982, 44 percent of persons 65 years of age and older had completed high school as compared to 28 percent in 1970. The women who make up the current elderly population, however, have fewer years of formal education than do the younger women in the population. Historically, women have had lower college enrollments and completion rates than men, based, in part, on the fact that they tended to marry one or two years earlier than did their male counterparts. While this is only one factor, it appears to be significant especially in regard to the ability of women to enter or return to the work force.

Education is also important in helping women assume responsibility for their own health care needs. Future cohorts of women who are more highly educated and who have benefited from more health information will have an advantage in this area.

Leadership and political activity. Leadership roles of older women in national organizations such as the Gray Panthers and the National League of Women Voters have also been positive forces in initiating changes in the attitude of the public toward older persons. The older population is a significant segment of voters making up between 15 and 16 percent of the voting age population, and as older women become more active in politics, they will represent a potent political force. It is estimated that roughly 6 percent of the older population do vote regularly and women, because of their longer age span, tend to vote until their eighties. Women also are heavy contributors of time, interest, and dollars to local, state, and national elections.

Again, it is interesting to speculate about the role that future cohorts of older women will play. Since many of the activists in the consumer movement have been women, and since more young women are gaining positions of power in business, medicine, and politics, it is anticipated that women's health issues will remain in the forefront.

Religion. One of the social institutions that has always welcomed the contributions of women, if not their formal leadership, has been the church. Religious groups offer older women a sense of stability in the rapidly changing society as well as opportunities for establishing strong social relationships. Frequently, the church or synagogue serves as surrogate family to women without close family ties. Working as volunteers in the social service programs of church or synagogue can allow these women to participate and contribute in socially significant ways to the community. Older women are recognized as solid supporters of such institutions both through their services in life and their memorial gifts and bequests at their deaths. It has been shown that religious beliefs and service to others contribute to older persons' feelings of personal fulfillment. It is expected that attendance at church and other church social activities among this group will continue to rise (6b).

Images and stereotypes. Another difficult transition for a woman is related to her changing image from a younger to an older person. While individual personalities modify the reaction to this transition, the older woman can be affected by changes in her self-image as well as by existing societal images and stereotypes. Negative images of women in general, and older women in particular, can affect the older woman in all aspects of her life, and her particularly in her approach to health care. For example, the current societal norms of physical attractiveness and youthfulness are difficult to maintain as one ages. In attempting to hold on to youth, older women are particularly susceptible to quackery and fraud in the area of cosmetics and beauty aids.

Since the turn of the century, society's attitude toward aging has passed through several phases. The initial popular image of the newly aging sector was very negative, and was characterized by highlighting declining physical and psychological capabilities including the likelihood of chronic illness, unemployability, and economic and social dependency. The pervasiveness of this image, according to the U.S. National Report on Aging for the World Assembly on Aging (6c) led many older people to identify with this stereotype and to withdraw from active social roles.

During the decade of the 40s, a few physicians along with social and behavorial scientists began to observe and study older people systematically. As a result of their findings they recommended that aging and retirement should be seen as positive experiences. The expectation of "work until the end of life" began to give way to what has been called the "leisure ethic", a stage which follows completion of parental or gainful employment roles or both.

Community organizations, senior citizen clubs, activity centers, and retirement villages began to appear throughout the country. These, in turn, stimulated the publication of newspapers and magazines devoted to the interests of the retired, and encouraged a generally heightened awareness of the older persons throughout our society.

While stereotypes of older persons in general are gradually becoming more positive, older women continue to have a problem with negative images particularly as portrayed by television. Older women are frequently presented as unsuccessful and, when involved in violence, likely to be victims. One of the underlying problems which persists and contributes to the continuing negative attitudes is our limited ability to separate the aging process from the various disease processes which afflict older persons (1). Until we have a better understanding of these two processes it is unlikely that many of our basic attitudes will be changed.

It is particularly important to dispel the negative stereotypes of older women found in the health care community. Physicians and health care personnel must not view women as chronic complainers and hypochondriacs and they should make every effort to listen carefully to women patients, reports of their health problems and concerns. It is equally important for the older woman to communicate clearly with her health care provider; part of this capability is derived from her own self-confidence, and the other from how the provider treats her.

Legal issues. Legal service is an area in which the opportunity for positive changes is unlimited. Today, few legal services are available at affordable cost, and significant language barriers exist between lawyers and some older clients. The prevailing negative stereotypes of older women also affects their access to needed legal advice and service.

The White House Conference on Aging (8) addressed the problem of legal services as follows: the term "equal justice" under law applies to all citizens, regardless of age. For the elderly, access to legal services is especially important when needed to ensure the equitable and efficient delivery of services which are sometimes critical for improving the quality of life.

The legal needs of the elderly are diverse, ranging from advice on handling simple probate proceedings to dealing with government agencies regarding benefits or issues involving discrimination under the Age Discrimination Act of 1975.

Legal services are available to older Americans from bar associations at the national, state and local levels, the Legal Services Corporation (LSC), and the Administration on Aging (AoA). The number of elderly receiving legal assistance today is at least twice that of only 3 years ago. Numerous State Bar Associations have launched programs specifically designed to address the legal needs of older persons; the AoA and the LSC have entered into a cooperative agreement to increase the quality and scope of legal services available to the elderly.

Despite this very positive trend, less than 20 percent of the legal needs of our country's 27,000,000 elderly are being met. The reasons for this fall into two categories. First, there is an inadequate number of attorneys accessible to meet the legal service needs of the elderly. Because the organized private bar is still the core of the American legal system (only a small fraction of the 530,000 practicing attorneys in the United States work for public legal service programs), more of its resources need to be tapped on behalf of the elderly.

Second, the elderly themselves are frequently fearful of a system they do not understand and often cannot afford. Furthermore, after initial contact with an attorney, the older person may find herself in a system that is complex, confusing, and fraught with delay. Sometimes the lack of direct access to the legal system is the greatest impediment to obtaining services (especially for a woman confined to a long-term care institution). This lack of access is even more of a problem if the older woman has no one she can trust to handle her legal affairs.

Work, retirement, and economic status. Another important factor relevant to the physical and mental health of the older woman is her economic status and the job and retirement issues related to this. Rising costs, especially in the health care area, have the greatest impact on the older American, and older members of minority groups have an additional burden of poverty to bear.

The participation of elderly women in the labor force has varied little during the past 30 years. In 1950, 10 percent of the elderly women worked; by 1981 that percentage had dropped to 8 percent. For women over the age of 70, participation in the labor force dropped from 6 percent to just under 5 percent during the same time period. Once unemployed, older workers tend to stay unemployed longer than younger workers. Additionally, they are less persistent in finding new employment following a layoff. According to unpublished data from the Department of Labor, if new employment is found, it is estimated the older individual on the average, will earn $1,500 less than she earned earlier.

Though a small percentage of the work force is comprised of women over age 65, the health of the women who are employed is influenced by physical and mental stresses of work, trauma of entering (or re-entering) the work force; and age discrimination or stereotyping at work. On the positive side, working may help to sustain a woman's sense of self-worth and independence. The activity level and socializing associated with working can help her to maintain good physical and mental health.

While participation of older women in the work force is declining, their volunteer activities appear to be rising. Older women make up a large segment of the volunteer workers in community-based institutions--church or synagogue, the schools, and neighborhood civic groups. Additionally, many of the Federally funded programs specifically encourage the participation of older persons as volunteers. Examples include Volunteer in Service to America, ACTION's Foster Grandparents Program, the Veterans' Administration, and the Peace Corps. Older women also are increasingly serving on advisory councils and groups. National policy now directs that older persons be named to advisory boards on state and local agencies on aging, in an effort to capture the experience and specific knowledge of older people. Part-time work is also an increasingly popular activity of the older woman. Elderly women now account for 4 percent of the 50 to 60 percent of part-time workers.

The transition to retirement status can have both positive and negative effects on an older woman's health. On the positive side, it may allow her more time to pursue activities she enjoys. On the negative side, it may mean a decrease in income, in social contacts, or in her feeling of usefulness and independence. Most of the women over 65 today are not working and for income have to rely on benefits from social security or private pension plans. Since many of the non-working women receive only a percentage of the retirement income of their spouses, they are likely to become more economically disadvantaged with inflation.

A pattern of declining income with advancing age tends to be the rule especially with increased expenditures for health care. This is particularly true for older women who live alone, 31.4 percent of whom are living in poverty, and for older Black women. As women age, the percentage of those at the poverty level increases. In 1981 elderly women had a median income of $4,800 with White women averaging $4,900 and Black women $3,500. Three-fourths of the elderly had incomes below $10,000.

Social security benefits are the single largest source income for the elderly. These benefits constitute more than half the income for the elderly population. For elderly Blacks living alone, along with one-fifth of the total elderly, such benefits make up 90 percent or more of their income.

Special populations. The elderly population varies considerably by race and ethnic origin. In 1980 the proportions of elderly for each race were: White, 12 percent; Black 8 percent; Asian and Pacific Islanders, 6 percent; and Hispanic and Native Americans, 5 percent each. The National Institute on Aging estimates that in the 1980s, almost 40 percent of the entire population over the age of 65 will be Black or first or second generation Americans belonging to racial ethnic subgroups.

Being a woman over age 65 and a member of a racial or ethnic minority group presents special challenges. Many of today's older minority woman grew up and grew older at a time when racial and ethnic prejudices were more pronounced than they are today and when there were fewer economic opportunities for them. For example, today's Black woman grew up in an era of discrimination in both educational and occupational arenas. Consequently, in her later years, she is more likely to have an income below the poverty level, more likely to live in substandard housing, and more likely to suffer the ill effects of years of poor nutrition and neglected health and, therefore, suffer more chronic illnesses. Hypertension, heart conditions, and arthritis, for instance, are more common among older Black than older White women. In addition, older minority women are less likely to receive adequate medical care and often do not know about benefits for which they are eligible or resources that are available to them. Life expectancy is lower for minority women than for White women. 1980 figures show White females have a life expectancy of 78.1 years while other females have a life expectancy of 74.0 years. Migrant and Native American women are at a particular disadvantage, having the lowest life expectancy in the United States.

Cultural beliefs affect many aspects of health care delivery and may affect how the women use health care services, how they perceive their personal health status, when they will seek care, and when they will use the traditional healers of their culture. These beliefs may also control how the elderly within an ethnic group should be cared for.

In spite of Medicare and Medicaid, some studies have shown that financial barriers, which result in less utilization of health services by the elderly, still remain. Medicare does not cover all expenses and it can be a hardship for the elderly (often on fixed incomes) to pay for what is not covered. Preliminary estimates from National Medical Care Utilization and Expenditure Survey indicate that while 72.6 percent of the White elderly have supplemental private insurance, only 32.1 percent of the non-White elderly have similar coverage.

In all, the gap in health status which exists between most groups of non-Whites and Whites exists throughout the lifespan of the minority woman. There are no adequate studies which identify the causal factors for this gap in health status though numerous psychosocial, economic, and biomedical factors all play a part.

Morbidity and mortality. To date there are about 27,000,000 people in the population over age 65, with a preponderence of women in each age group.

Contrary to the sterotype, most older individuals are in good health. In a 1980 Health Interview Survey of the National Center for Health Statistics (9) 9 out 10 elderly persons described their health perceptions (versus actual health) as fair, good or excellent compared to others their age. Though there are many healthy older women in this group, very little information is available on them. The need for more information about healthy older women calls for more descriptive studies of this segment of the population.

Over the years, sex differences in morbidity and mortality have existed. Mortality rates for older men are higher than for older women and this is true for all age groups over 65 and in regard to all leading causes of death.

Using current mortality rates, men at age 65 can expect 14 more years of life, compared to 18 for women. Although women are more frequently ill than men, older men are more often seriously ill than women. The diseases which affect elderly men and are the leading causes of their death are the same diseases that cause the predominant illnesses in older women. Older women have a higher incidence rate than men of hypertension, arthritis, diabetes, and heart disease. However coronary heart disease, which is especially life-threatening, has higher prevalence rates in men. It will be interesting to see if the employment and stress patterns for today's younger woman will alter those rates as that cohort group reaches older age.

During the 1970s mortality rates among the older population dropped for almost all leading causes, but especially for heart disease and cerebrovascular disease. The decline for all causes of mortality and particularly for leading ones were generally greater for older women than older men. Interestingly, despite the greater life expectancy of the older woman and her generally lower mortality rates, women die from the same major causes as do men, namely: heart disease, cancer, cardiovascular diseases, and accidents. It is not uncommon for an older person to be afflicted with several of the noted disease conditions at one time. In this respect, the health problems of older men and women are similar. What complicates the issue for older women is that they live an average of 8 years longer than men, which not only means they have to endure these multiple chronic conditions longer, but they are thereby placed in greater jeopardy of disability and dependency with resultant institutionalization for long-term care. (Today, according to unpublished data from the National Center for Health Statistics older women already comprise 86.4 percent of the nursing home population--1,126,000 women, and perhaps an equal number among the one million boarding home residents).

Older women also differ from their younger cohorts in the prevalence of certain diseases. According to the 1979 National Health Interview Survey (10a), the major health characteristics of older women, 65 years of age or older, are the greater prevalence of multiple long-term chronic illnesses that cause limitations in life style. According to this study, non-institutionalized older women had a higher prevalence than adult women aged 17-64 years of the following conditions: visual and hearing impairments, arthritis, hypertensive disease regardless of heart disease, coronary heart disease, cerebrovascular disease, diabetes, impairments of the lower extremity and hip, chronic bronchitis, all diseases of the urinary system, functional and organic symptomatic upper gastrointestinal intestinal disorders, constipation, and all types of anemia.

Concerns About Physical Illnesses

As mentioned in the section on morbidity and mortality, older women have higher incidence rates than older men of certain chronic conditions: diabetes, hypertension, and arthritis. While each of these diseases can be devastating in itself and can lead to other secondary conditions, coupled together they can lead to debilitating problems for the older person. Though some of these diseases will not be discussed in great detail in this chapter, it is important to realize that an older woman may often bear the burden of several of these disorders.

Hypertension. The results of several major epidemiological studies have shown that high blood pressure or "hypertension" is one of the primary risk factors contributing to death from major cardiovascular disease and cerebrovascular disease (stroke). In the late 1970s, the prevalence of elevated blood pressure (defined as the ratio of systolic/ diastolic pressures greater than 160/95, on three readings) was higher among men ages 26-64 than among women. However, the difference was not statistically significant. The proportion of women who are hypertensive has not changed between 1960-62, (when the first National Health Examination Survey was conducted) and 1976-1980, the dates of the last survey. However, the proportion of adult hypertensive women who were on medication and whose blood pressure was controlled increased from 22 to 40 percent of the Whites and from 20 to 38 percent of the Blacks. Women, both Black and White, were twice as likely as men with hypertension to be on medication and have their blood pressures under control (11).

It has been shown that high blood pressure increases both mortality and various morbidity risks. Clinical complications associated with hypertension can result in stroke, kidney disease (for which the medical costs are substantial), and increased risk for heart attack due to artherosclerosis.

Coronary atherosclerotic heart disease. Research on the risk of coronary heart disease has previously centered on men, and large scale studies have mostly evaluated only that sex. However, as the life styles of the younger women cohorts begin to resemble those of the men (i.e., increased physical and emotional stress, increased smoking) coronary heart disease may become an important problem. Nanette Wenger (12a) found that risk factors for coronary heart disease, such as elevated serum cholesterol and hypertension are frequently found in older women. According to the Health and Nutrition Examination Survey (HANES II) (12b) women in the 65-74 year old range had an increased incidence of high cholesterol (40.7 percent) compared to the men (20.9 percent).

It is not clear what the role of sex hormones is in the development of this disease. According to Wenger (12c), there appears to be a marked increase in the incidence of heart attack, stroke, and congestive heart failure in post-menopausal women. This was determined in the Framingham study when women under 55 years were compared by menopausal status. However, changes in other known risk factors were not able to account for this increase.

"There remains a paucity of information about any factors that affect the incidence and course of coronary heart disease in women, but attention is now directed at this problem. Although the overall risks are greater for men, it is increasingly recognized that women are also vulnerable and that their prognosis tends to be less favorable" (12d).

Diabetes. "The prevalence of diabetes is twice as high in the 65 and older population (about 10 percent) as in the rest of the population (5 percent) (13)." Recent findings show that about 2,000,000 Americans 65 years of age and older are diagnosed as being diabetic, and an additional 2,000,000 meet the updated criteria for having diabetes, but remain undiagnosed. The number of known diabetics aged 65 years of age and older in this country has doubled in the past 20 years. In financial terms, it is estimated that diabetes costs $10,000,000,000 annually in medical care alone. According to the National Commission on Diabetes (13), the probability of developing diabetes for those who survive to age 85 (mostly older women), is about 23 percent in men and about 35 percent in women.

Furthermore diabetes has a disproportionate effect on older persons. "Compared to the non-diabetic population, persons with diabetes are 25 times more likely to become blind, 17 times more likely to develop kidney disease, 15 times more likely to undergo major amputation, and twice as likely to suffer a heart attack or stroke...However, absolute risks of specific complications in relation to duration and degree of glucose intolerance in the elderly are not well quantified" (14).

"Among the problems specific to diabetic women over 40 are the following:

- Cystitis (inflammation and/or infection of the bladder).
- Complications related to oral medications to control diabetes. Some anti-diabetic drugs can trigger heart disease and even death.
- Osteoporosis. (Diabetic women are particularly high risk for this disease).
- Increased symptoms of menopause. (The diabetic menopausal woman not only suffers the discomforts other older women suffer, but she is often confused by the symptoms, i.e., profuse sweating, vaginal itching, and fatigue which may be due to specifically menopause or to an insulin reaction" (15a).

A decade ago, diabetes was appreciably more prevalent in older women, but it is now more prevalent in older men. The reasons for this change are unclear but may be attributed to a specific increase in the incidence of diabetes in older men, a lowering of mortality associated with diabetes in men, and an increasing proportion of men who are now diagnosed as having the disease or a combination of these factors.

The prevalence of diabetes in Black Americans is about 50 percent higher than in Whites of the same age. The prevalence in the elderly segment of certain U.S. ethnic groups (especially women) is even higher than in Black or White Americans. For example, among Mexican-Americans, 14.5 percent of persons aged 65 to 74 living in Starr County, Texas had a history of diabetes (16). Another study caried out in the population of Laredo, Texas, found an even higher prevalence--24 percent reported a history of diabetes. This compared to 5.9 percent for the predominantly White population of Rancho Bernando, California (17). The marked prevalence in the Mexican-American population may be the result of American Indian admixture, since some groups of American Indians have extremely high prevalences of diabetes in the older age groups (40 percent) (18).

Obesity is also a powerful risk factor for diabetes but whether its influence is as great in the elderly as it is in younger adults is unclear. In a U.S. study, lower socioeconomic status and lower educational attainment were associated with diabetes in both elderly and younger adults, regardless of race (19). The significance of these associations, however, is unclear. Knowledge of other diabetes-associated risk factors in the elderly is sparse. "Factors associated with a disease may be directly or indirectly related to its etiology, or may be the consequence of it. Only prospective studies of diabetes can determine whether a particular characteristic constitutes a true risk factor", according to one author (13).

"Most prospective studies of diabetes incidence have concentrated on younger adults, despite evidence that the elderly, as an age group, are at highest risk of developing diabetes. Investigating determinants of diabetes in the higher age ranges may therefore be a fruitful area of research" (13).

Cancer. Cancer ranks second to heart disease as the leading killer of American women. In general, women report more malignant neoplasms and more hospitalizations for them compared to men (20); however, women's death rates are lower. Several reasons might account for this: (a) It may be that women have their cancers diagnosed and treated earlier so they are aware of their problems when interviewed; (b) they may also be more willing to report their cancers; and (c) more cancers in commen can be controlled which lowers the risk of cancer mortality.

Breast cancer comprises 27 percent of all cancers in women and the breast is the leading cancer site in both Whites and Blacks (21). The greatest risk factor affecting breast cancer appears to be age. The longer a woman lives, the greater are her chances of developing the disease, leaving the post-menopausal older woman at higher risk.

Survival rates are strongly influenced by early detection and treatment. Since controversy surrounds all types of treatment choices, it is imperative that breast cancer victims be as well informed as possible in order to make a life-enhancing decision.

"Cigarette smoking is the leading cause of cancer in the United States: more than 35 percent of all cancer is directly or indirectly attributable to smoking" (22a). Women who had taken up smoking in the 1920s and continued to smoke are now in their sixties; many young women have also picked up the smoking habit. The concomitant rising lung cancer rate attests to this trend.

"According to the American Cancer Society, 14.2 percent of women smokers consumed 25 or more cigarettes per day in 1965. By 1980, that figure had risen to 23.7" (22b). In 1982, the cancer statistics in California showed that lung cancer had surpassed breast cancer as the number one killer of American women. It is expected that these statistics will prevail throughout the rest of the United States by 1985. The tragic aspect of this is that, unlike other types of cancer, lung cancer is largely preventable. Because smoking is related to several serious health consequences (cancer, increased risk for cardiovascular and pulmonary disease) and is a preventable health risk, a major PHS prevention program is aimed at cessation of smoking. Needless to say, many young women will never reach the age of 65 if they continue to smoke.

Colon and rectal cancers rank third in the causes of cancer deaths for women. Though the mortality rate are high for these forms of cancer (almost 50 percent), 2 out of 3 patients can be saved by early diagnosis and prompt treatment (15b). Increased emphasis on preventive screening and dietary fiber may reduce the risks of these cancers in old age.

Uterine cancer (both endomentrial and cervical) accounts for the fourth highest cancer rate in women (15c). Cervical cancer accounts for 3 percent of cancer deaths of women, with Black women three times as likely to die from cancer of the cervix as White women of all ages. Puerto Rican immigrant women have four times more cervical cancers than do White women (15d). The risk of death from cervical cancer increases with age (21) and research is ongoing to determine why this is so.

Cervical cancer, like endometrial cancer, is treatable, especially if it is diagnosed at the early stages of the disease. A regular "Pap" smear is an excellent preventive measure for these cancers. Endometrial cancer, like cervical cancer, can be detected with the Pap smear; and most cases of this type of cancer are diagnosed in older women (age 50-64) (15d). The occurrence of endometrial cancer in older women correlates with the post-menopausal use of estrogens in those women. As will be mentioned in the section on osteoporosis, replacement of estrogens after menopause is a recommended therapy for many women who are at risk for osteoporosis. Estrogen-replacement therapy is also prescribed to alleviate some of the effects of menopause. Use of estrogens has remained a controversial therapy because of the increased risk of endometrial cancer associated with it, although many physicians feel that since this cancer is treatable, the relative benefit to risk ratio makes this an acceptable therapy for certain conditions.

In summary, the "War on Cancer" has produced much information on the etiology, therapy, risk factors, and prevention of certain cancers. Today's younger women may experience fewer cancers in old age if they pay attention to risk factors such as stress, diet, smoking, occupational hazards, and sun exposure. For older women who have developed cancers, the advances in many treatment modalities have extended their chances for a longer life and provided an improved quality of life where one did not previously exist.

Osteoporosis. Osteoporosis is a condition found in older persons (especially older women) in which the structure of the bone becomes porous and, thus, more susceptible to fracture. This disease has received a great deal of attention, of late, as a critical health issue for older women.

Reports from a recent NIH Consensus Conference on Osteoporosis (23) stated that this disease is a major public health problem and is the principal underlying cause of bone fractures in post-menopausal women and older persons in general. The spine, wrist, and hip are most commonly affected by this disease. Adverse conditions resulting from osteoporosis range from back pain and loss of height due to vertebral compression, to hospitalization, depression, or death from hip fractures. In all, the threat of such fractures promotes numerous fears in the older person: loss of independence, additional falls, pain and further fractures, and hospitalization. Thus, the conference report suggests that prevention of initial fractures in osteoporortic individuals is of primary importance. Appropriate weight-bearing exercise, calcium intake, and estrogen replacement therapy where specifically indicated, in post-menopausal women are all possible preventive measures.

Osteoporosis has particular implications for older women. First, women, because they have less bone mass than men, are at greater risk for the disease. White women are more at risk than Blacks. Second, it is believed that the accelerated bone loss that some women experience after menopause is related to a decrease in estrogen levels. Thus, few physicians have been prescribing estrogens to women in an effort to counteract that trend. Estrogen therapy, itself, remains a somewhat controversial mode of treatment because it is thought to increase the incidence of endometrial cancers in those women who take it.

It should be noted that the conclusion of a recent NIH Consensus Conference on this topic stated that "estrogen replacement therapy is the most effective single modality for the prevention of osteoporosis in women" (23a). The document also stated that the endometrial cancers that might be associated with estrogen therapy are "rarely fatal when properly managed." The consensus panel also noted that while estrogen replacement therapy might be effective in preventing bone loss soon after a woman experiences menopause, "there is no convincing evidence that initiating estrogen therapy in elderly women will prevent osteoporosis" (23b).

Osteoporosis increases an older woman's chances of debilitating injury particularly hip fractures. As mentioned in the section on accidents, these fractures have serious consequences. Not only do hip fractures increase the older woman's chances of being institutionalized, but there is also a high mortality rate associated with these fractures. According to one paper (24), of the patients who experience hip fractures, 20 percent die within the first year, 20 percent become totally dependent, 25 percent partially dependent and only 30-35 percent recover independence after that first year.

Finally, it is felt that osteoporosis may be a preventable disease, and that young women and old should be cognizant of the role calcium and weight-bearing exercise are thought to play in preventing bone loss. Although a daily calcium intake of 1000-1500 mg (through foods or calcium supplements) has been recommended to maintain proper bone mass, there is insufficient data as yet to show that it will reduce the rates of hip fractures. More studies also need to be done to determine the effects of exercise on preventing bone loss.

Arthritis. Though almost all arthritic conditions are more prevalent among the elderly, the disease affects a larger number of women than men (25), and is a leading cause for limiting activity in older women (26). In addition, arthritis, in particular osteoarthritis, was diagnosed in 5.4 percent of all women over 65 years of age who made office visits to physicians and accounted for 10.1 percent of specific diagnoses for hospital discharges (27).

The traditional therapy for arthritis is aspirin, rest, exercise, heat, and diet. Some researchers (27) feel that an estrogen regimen might provide a preventive strategy for the disease. Because arthritis is a chronic, disabling disease, many older persons may be more susceptible to trying unconventional cures which may have no proven medical benefits (such as copper bracelets, fad diets, vitamin therapies or dimethyl sulphoxide known as DMSO). Arthritis is a disease which tends to be more disabling than life-threatening. Loss of mobility and function, coupled with other chronic diseases afflicting older women, decrease their ability to remain in an non-institutional environment.

Very little is known about the social and medical factors which result in disability attributed to arthritis, except that medical factors play a much less substantial role than social factors such as an individual's demographic background, the work situation, and the will to push on. All told, the indirect costs of arthritis (those due to wage losses as a result of disability) are twice as large as the medical costs. Nevertheless, almost no research addresses the causes and consequence of disability resulting from arthritis.

Incontinence. Incontinence is a particular problem for older women. Incontinence is defined as, "the involuntary loss of urine (or stool or both) that is of sufficient amount or frequency to be a social or health problem ..." (28). This condition is the second (with dementia being first) most common reason that women are institutionalized in long-term care facilities. The cost of managing and caring for incontinent patients (mostly elderly) amounts to about 8,000,000,000 dollars a year, or 3 to 15 dollars per day, per person. In fact, because the condition is so hard to manage at home, it may often be a pivotal factor in the decision to institutionalize an older person (29). There are various types of incontinence and it is important for the clinician to make an accurate diagnosis so that the most effective and cost-conscious treatment can be designed.

Acute incontinence generally occurs as a concomitant to another acute medical problem (e.g., immobility, delerium, side effects of drugs, or urinary tract infection).

Persistent incontinence is not associated with an acute medical problem and worsens over time. It can be characterized in several different ways, each with a different cause:

1. stress incontinence is urine leakage and is usually associated with an increased pressure on the bladder e.g., sneezing, laughing, exercise;

2. urge incontinence may occur at all ages most often in women and is characterized by an inability to delay voiding before reaching the toilet. It is often associated with conditions like stroke, senile dementia, Parkinson's disease, and multiple sclerosis;

3. overflow incontinence is due to an inability of the patient to empty the bladder completely because of a blockage or loss of normal bladder contraction; and,

4. functional incontinence may be due to a variety of causes including physical or mental impairments, lack of the appropriate desire to prevent voiding, or lack of persons to provide needed treatment (28, 30).

With so many different types of incontinence and relevant causes of the condition, a variety of therapies exist, the choice of which should be tailored to the patients needs. These include medication, behavioral modification (including biofeedback), exercises, surgery, prosthetic devices, catheters or absorbent undergarments (30).

Because incontinence is so prevalent in older persons (40-50 percent of those in nursing homes and 16-20 percent in the community) (29) and because it may be pivotal in the decision to institutionalize an older person, it is critical that diagnosis be accurate and treatment effective. Some physicians have suggested that the British concept of incontinence clinics may be the best solution to this problem, which is costly both in medical and economic terms (28).

The effects of incontinence for the older woman range from embarassment and social isolation to the need for costly institutional arrangements. Thus it is an important medical problem for all older persons, but especially women, who live longer and are, therefore, at greater risk for the condition.

Accidents. Accidental injuries in the elderly have been an emerging area of concern for the PHS. A recent study on aging and health promotion (31a) sponsored by PHS examined this subject closely. According to the results of the study, accidents represent the fifth leading cause of death among those 65-74 years of age, and are the sixth leading cause of death for those over 75. In the over 75 population (which is mostly women and which is the fastest growing population in the U.S.) the death rate from accidents is four times that for all Americans (154.8 per 100,000). The injury rate from accidents is also very high for the over 65 population. In 1977, accidental injuries resulted in almost 43,000,000 days of bed disability for people over age 65 (31a).

According to the report, the principal causes of death due to accidents are: falls, motor vehicles, fires, burns and other accidents. While the death rates for all categories of accidents are higher for men than for women, it is important that preventable occurrences be studied in women as well as men. Because women comprise a greater percentage of the over 75 population, it is essential that disabling injuries be prevented to the greatest extent possible.

Of the types of accidents listed in the report, injuries from falls are of particular concern. As of 1979, 7 percent of deaths from falls occurred in persons over 65 years of age. This figure jumps six-fold in persons over 75. According to one article (32), the common causes of falls in older persons may be broken down as follows: 48.4 percent, accidents; 15.1 percent, miscellaneous; 14.7 percent, drop attacks; 11.1 percent, vertigo; 6.9 percent, central nervous system lesions; and 3.8 percent, postural hypotension. Changes of aging may contribute to the frequency of these falls.

The consequences of falls may be particularly devastating in older women, as fractures of the hip, wrist, head, and back are the common result of such accidents. (There is some debate as to whether home falls cause hip fractures or vice versa. This is not resolved). Hip fractures alone have an estimated mortality rate of 20-30 percent. Approximately 200,000 hip fractures occur each year in the United States, each one costing about $10,000 in medical care. (This accounts for about $2,000,000,000 in acute care costs). Hip fractures also result in a chronic disability with 13 percent of survivors never returning to independent ambulation (31a). Hip fractures occur primarily in women, with White females having twice the risk of other groups at every age. As mentioned in the section on osteoporosis in this report, the higher incidence of osteoporosis in this group of women may also be a significant related risk factor.

Clearly, preventing falls and the consequences of them is of particular importance to the older person. Proper therapy and prevention will depend upon the cause of the fall and may include: the use of devices that aid in walking, rearrangement of furniture or rugs in the home, provision of adequate lighting, assessment of medications for side effects, or the prescription and use of proper eye glasses.

While accidental falls have been given extensive treatment in this chapter, there are other accidents to which older women may also be prone. These include: burns (from hot water, kitchen fires, smoking in bed), poisoning (failing memory and eyesight coupled with multiple drugs that may be lethal), and accidental hypothermia, or heat stroke.

Other Health Concerns

Sexuality. Society has not been kind to the sexual desires of older people. According to Butler and Lewis (33) it has been presumed that:

- Older people do not have sexual desires.
- They could not make love even if they did want to.
- They are too fragile physically and it might hurt them.
- They are physically unattractive and therefore sexually undesirable.
- Anyway, the whole notion is shameful and decidely perverse.

Probably the most profound sexual difficulty centers around older women who are widowed, divorced, or single. The 1980 census showed that 42.9 percent of the noninstitutionalized women, aged 65 and over, were living alone or with nonrelatives. Four out of every 10 older women lived alone. This occurs primarily because men who are widowed remarry. The 1979 data show that the marriage rate for men, aged 65 and over was almost 6 times that of older women. There are fewer males in this age group and men usually marry women younger than themselves thus partially accounting for this higher rate (34).

Older women will admit sexual desires but many regard such feelings as undignified. Many women are concerned about the cultural expectations of society and reinforce the sterotypes set by society by appearing to be sexless. The sexual needs of the elderly are further ignored in many homes for the aged and in nursing homes where sex segregation is often enforced. Appropriate arrangements for conjugal living are rarely available.

Certain myths about menopause have caused some women to fear the aging process. Sex education for the elderly is necessary to help them understand the biological and physiological changes. Feelings of affection and sensuality do not decrease with age, indeed they may well increase. Older women, as well as older men still enjoy sexual relationships despite of their physical changes. For women, the changes occur mainly in the shape, flexibility and lubrication of the vagina. For the most part, the changes can usually be traced to lower levels of the estrogen during and after menopause (35). With the loss of estrogen, vaginal secretions become less acidic and increase the possibility of vaginal infections. The urethra and bladder may become more subject to irritations as they are less cushioned by the atrophied vaginal walls and there can be burning or frequency of urination after sex (36).

There is no evidence that surgical procedures such as hysterectomies and mastectomies, ileostomies, or colostomies affect sexual desire or performance in women. However, these physical losses often produce psychological distress which needs to be addressed.

The increased incidence of illness and disabilities may inhibit sexual activity in later life, but even the most serious diseases rarely warrant stopping sexual activity. An accute illness obviously has an immediate effect, but over time, even with a chronic condition, sexual activity can often be resumed. Doctors need to counsel their patients about sexual activity as well as the potential sexual side affects of drugs. For example, an antihypertensive drug may adversely affect one person, but not another. These side effects of drugs should be balanced against the risks of the disease and the patient's preference should be considered in the decision (36).

Robert Butler has suggested that there is a second language of sex, namely a growing capacity seen in many emotionally healthy older persons to develop to new levels intimacy and communication in a love relationship. Sex in later life is sex for its own sake--pleasure, release, communication or shared itimacy or both. At this time women are no longer associated with child bearing and the creation of young families.

Butler feels that it is possible that only in later life, when a personality reaches its final stage of development, that love-making and sex can achieve deepest meaning to the partners.

Masters and Johnson (37), who studied human sexuality reported that the two major requirements for enjoyable sexual activity in later life are reasonably good health and an interested and interesting partner.

Menopause. Although menopause is a natural process in the life cycle of aging women, it often has been treated as a disease. While the woman 65 years of age and older may be several years past the onset of her menopause, the physiological changes accompanying menopause may affect various aspects of her later life. The symptoms most frequently related to menopause include hot flashes, vaginal dryness, and osteoporosis. The most prescribed and used treatment for menopausal symptoms has been exogenous estrogens. Since the mid-to late 70s, estrogen use has decreased markedly with the publication of research results indicating a causal link in its use to the increase of endometrial cancer and possibly breast cancer. There is disagreement about the analytical procedures and mechanisms used in these studies. None-the-less, a consensus exists regarding the need for a systematic collection of knowledge about the climacteric experience in women who are not treated with estrogen along with the research alternatives to estrogen therapy for treating the menopausal symptoms.

Sensory Impairments. Impairments in vision and hearing are also prevalent conditions which limit the mobility and independence of older women. In addition, these sensory impairments may also increase an older woman's risk of falls, errors in taking medication, and traffic or other accidents.

Decreasing sensory function is often not given serious attention because the physiological changes are gradual and often thought to be simply a consequence of the aging process. However, the effects of limited vision or hearing can be a serious threat to the older woman's ability to remain in her own house, to enjoy recreational activites, and maintain an independent life style.

Although proper fitting glasses or hearing aids might be solutions for the older woman with sight or hearing problems, the people providing these services need to be especially sensitive to the special needs of the older person. For example, the hearing aids that may provide ample relief of a hearing disability might also be impossible for a woman with arthritic fingers to adjust.

Dental conditions. Poor oral health has a detrimental effect on one's overall health and is not an inevitable part of aging. According to one source (15e), "more than half the population over 65 years of age has either not seen a dentist in the last 5 years, or has not seen a dentist."

Poor dental hygiene and dental care result not only in cavities and tooth loss, but gum disease. "For an older woman, this creates possible changes in facial appearance, chewing efficiency, speech performance, body image, and, as a result of these, perhaps social acceptance" (15e).

The best treatment for incipient dental problems is prevention: proper brushing, flossing, and diet. It is important to remember, however, that many of today's older women lived through a period of time when dental care was less affordable, accessible (especially for the poor and immigrant children), and more painful. Thus, many of them delayed treatment until late in life, with serious consequences. The education programs on dental hygiene for younger women of today should eliminate many of the dental problems for the future cohort of older women.

Podiatry. Simple foot care is a problem for many older women. Not only is podiatry an often-neglected part of health care services by health professionals, but the older woman often has difficulty taking care of herself because of poor vision or lack of flexibility in her hands. She may have a hard time performing routine nail and foot maintenance. Thickened toenails due to fungal infection and cracked, swollen, or calloused feet are all preventable; foot problems in general can be helped by properly fitting shoes. Good foot care is essential for maintaining the mobility of the older woman and is crucial for the success of certain rehabilitation programs (38).

Nutrition. In order to understand factors which affect the process of age-related changes in tissue structure and function, and the emergence of multiple chronic diseases in the elderly, it is fundamental to consider the nutritional needs of the elderly. The relation of good nutrition and diet to overall mental and physical health is important for all age groups, even though biomedical research is still just beginning to elucidate the relationship between dietary intake of certain nutrients and various diseases. Clearly, the physiological changes associated with the aging process present a dynamic situation for which the nutrient requirements must be determined.

What are some of the physiological changes occurring in the older woman that may affect her nutritional needs? According to one review of nutritional requirements in the elderly (39), there is a continuous decline in the lean body mass of both males and females. "It has been reported that by age 70, the kidneys and lungs lose about 10 percent of their weight and skeletal muscle diminishes by 40 percent." There is no evidence as yet that nutritional factors reduce this trend, except in so far as they may reduce bone loss. As discussed in the section on osteoporosis in this chapter and in the commissioned paper in this report, calcium and vitamin D intake appear to be important in preventing or reducing the severity of this disease.

Other physiological changes which occur with aging may also need to be considered with regard to nutritional requirements for the older person. These include changes in tissue and metabolic function, certain functions of the immune system, the numbers of cellular receptors and uptake of nutrients by cells, and the basal metabolic rate and energy needs of cells. Some of these factors may determine which nutrients and at what levels (how much of a certain nutrient) are required to meet the needs of the aging body.

What are the current guidelines for nutrition in older persons? The recommended dietary allowances (RDA's) developed by the National Academy of Sciences, provide guidelines for adults over age 51 (31b). However, there are no guidelines, as yet, for all persons over 65, much less for women over 65. The nutritional requirements for women over 65 might differ from those of younger age cohorts, with men, among women of the same age group and among different sub-populations of the elderly. In addition, older persons who are taking medications for a variety of chronic disorders may have even more specialized needs.

A recent PHS report on health promotion initiatives for the older individual (31b) listed several nutrients and dietary factors on which public education efforts might be concentrated. These are:

- fats--(including saturated fat and cholesterol) which may be related to risks for heart disease, hypertension, and certain cancers;
- calcium--which is linked to osteoporosis; and,
- sodium--which has been linked to hypertension.

There are other areas of diet and nutrition which are of interest to the older woman as well. Overweight, for example, is a condition about which women are particularly sensitive and which may be especially prevalent in lower income or minority women. Obesity is a problem not only because it may increase the incidence of hypertension and diabetes, but it may lead women to try crash diets and diet medications, which might do them further harm.

Dietary supplements (such as vitamins and minerals) are also becoming more popular among older persons. A recent study (31b) found that use of dietary supplements increased with age (especially in low income groups) and that many older people felt that a higher dosage of vitamin supplements was more beneficial to their health. Since the Minimum Daily Requirements (MDR's) of many of these vitamins may be different for those over 65, and since the majority of these supplements are taken without a prescription, there is an increasing concern over the adverse effects of too much vitamin use. In fact, the National Institute on Aging, recently published a pamphlet (40) to encourage older persons to use the established RDA's as a guidepost for their vitamin usage. Some of the serious side effects of megavitamin and mineral use might be: Vitamin A --headaches, nausea, diarrhea, and eventual liver and bone damage; Vitamin D--kidney damage; and iron--liver damage.

In addition to megavitamin use, older persons (especially women) are susceptible targets for a variety of false nutritional claims for some products that might claim to make the older persons "feel or work better", "look younger", "cure disease", or "lose weight rapidly". These products are often costly for a person on a fixed income, and might raise false hopes about health status or even interfere with the action of any medication that an older person may be taking.

With all the confusion and new information existing about diet and nutrition it is necessary that older women be informed and educated to ensure good nutrition for themselves or others (many older women are still care givers). Many older women are anxious to have such information.

In addition to education and information, improving poor nutritional status in older women may also have to be approached through other routes. A variety of factors can affect the diet and nutritional status of older women: poverty, dental problems, decreased mobility, changes in taste, isolation and loneliness, medication, convenience and availability of food stores, and cultural traditions.

It is clearly important that women of all ages be given the information and services necessary to help them maintain a healthly nutritional status. Not only will women themselves be healthier, but because they are often still in the position as care-givers, others will benefit as well.

Alcohol, Drug Abuse, and Mental Health Concerns

In 1978, a workshop, sponsored by the National Institutes of Health (NIH) and the National Institute for Mental Health (NIMH) was held to discuss the mental and physical health issues of older women. In discussing the concept of mental health in the older women, it was felt essential not to overlook the clinical interrelationships that exist between the biological, psychological, and social factors affecting both health and mental health. This section will discuss alcohol and drug abuse problems and mental health disorders in older women keeping in mind the interrelationships among all those factors which contribute to these disorders. Chapter four, Issues Related to Alcohol, Drug Use and Abuse, and the Mental Health of Women, should be consulted for completeness in relation to the discussions in this chapter which deal only with the elderly.

Alcohol Use

Incidence. Little is known about the nature and extent of alcohol problems of older people, especially older women. Although the past 40 years has been a period of increased growth and research in the fields of both gerontology and alcoholism, it has only been recently that alcohol problems of the elderly have been a focus of studies in either field. Moreover, while both specialties have focused on unique issues and problems of women, alcohol use and abuse by elderly women is virtually absent in gerontology and alcohol literature. As an example, a review of the contents of two recent publications (41, 42) yields no substantive information on alcohol and elderly women. The NIAAA has recently released a special issue of Alcohol World, on the use of alcohol by the elderly, one of the few publications on aging and alcohol available at this time (43).

Because of the scarcity of relevant studies, the information in this section is based in large part on the information available about alcohol and the older population in general, or alcohol and older men, and often includes interpolation of the information.

Traditionally, heavy drinking and alcohol problems have not been viewed as a major concern for the older population in general, or for women of any age. Research results over time have indicated a decline in alcohol consumption and heavy drinking from approximately age 50 and older (44). Drinking appears to begin in the teens with heavy consumption peaking in the 20s through the 30s followed by a general decrease in consumption over the life span. Similar trends have been reported in other countries for which such data are available (45).

Several factors, however, may account for such a low incidence of alcoholism in the elerly. Perhaps one explanation is the high mortality rate among alcoholics and heavy users of alcohol. Data repeatedly reveal that heavy users and alcoholics tend to have a mortality rate 2 to 6 times higher than that of the general population (46). While data are imprecise, heavy consumption appears to be directly implicated in heart diseases, certain cancers, cerebrovascular diseases, accidents and cirrhosis of the liver--the leading causes of death among the 45-65 age group (46).

It is also important to note that while data traditionally reveal a decline in consumption after age 50, drinking problems among the elderly may indeed be greater in this population. Even though data traditionally reveal a decline in general consumption after age 50 and it is often thought that older people are not victims of alcohol problems, the rate of problem drinking and alcoholism among the older population is estimated to be between 2 to 10 percent, approximately the same as the general population and is possibly higher than the general population average among clinical populations (47, 48). As examples, it is estimated that 18 to 56 percent of elderly medical admissions in general hospitals are alcoholic and that 23 percent of psychiatric admissions have alcohol problems (49). Of those older persons who seek medical assistance for any reason, it is estimated that a high proportion--10 to 15 percent--have alcohol related problems (50). It is estimated that approximately 20 percent of nursing home populations, most of whom are elderly, are alcoholics (51). One author reported that 17 percent of a total of 87 older persons who were seen at a community mental health center were diagnosed as alcoholic (52).

In addition to consumption patterns, another important difference between younger and older persons is the tendency of the aging body to be less tolerant of alcohol. In other words, given the same quantity of alcohol, older persons become more inebriated than do younger persons, due in part to a slowing of metabolism, the smaller volume of body water, and the decreased lean body mass in older individuals. Even if older persons do drink less than they formerly did or less than younger people, they often may experience increased effects of alcohol. Thus, if studies employ the same criteria for all age groups to determine "heavy drinking." these data may actually underrepresent the incidence of heavy drinking in the older population.

Further, as gerontologists have discovered, confounding variables such as the cohort effect often make the findings of cross-sectional studies for the elderly invalid. Because many of the past studies have been cross-sectional, the findings for the elderly may not accurately reflect alcohol consumption patterns among the older population. More recent longitudinal studies are in fact beginning to show a greater use of alcohol among older people.

With respect to women, studies have indicated repeatedly that across the life span, women tend to drink less than men. Based on the current estimate that 2 to 10 percent of the elderly are heavy or problem drinkers, this is approximately 1 to 6 million people over the age of 65. In view of the overrepresentation of women in the older population, the current size of the problem in absolute numbers is significant.

Further, although women may drink less then men do, women tend to experience a greater effect than do men from the same amount of alcohol. The reasons for the heightened effect of alcohol experienced by older women are similar to these stated above. While the mortality rates for alcoholic men are significantly greater than those for the general population, the mortality rates for women alcoholics are substantially higher at all ages than the rates for men. Therefore, while women may drink less than men, they tend to suffer more severe consequences in terms of mortality. In view of the above findings, it is clear that women are more sensitive to the intoxicating and potentially lethal effects of alcohol, than the data tend to show or than health care providers tend to assume.

Moreover, the number of older women with alcohol problems is bound to increase in the future based on the increased size of the older population. In addition, future cohorts of older women are being socialized at a time when alcohol is readily available and social drinking is an acceptable and often encouraged part of life. In fact, since World War II, the gender gap in alcohol consumption has been narrowing so that the incidence and quantity of drinking is nearly the same for men and women (53). As today's older women have done, future cohorts will take with them into old age the same values, habits, life-styles, and coping responses that they developed throughout their lives. There is every reason to anticipate a considerable increase in alcohol-related problems and alcoholism among tomorrow's cohorts of older women. In addition to differences in incidence of alcoholism and consumption, other alcohol-related differences between young and old as well as between women and men can be identified.

Patterns of alcohol abuse unique to this population. Categories employed to differentiate patterns of alcohol problems among the elderly are unique to this population. The two-part scheme used in the next chapter is extended into a three-part classification here (44). "Survivors" refers to older drinkers with an early onset and life history of chronic drinking problems. These are the drinkers who defied statistical probability and survived into old age despite their drinking problems. They are at high risk for medical problems related to alcohol.

"Intermittent" drinkers, sometimes grouped with survivors into an early onset category, are those whose heavy drinking also began early in life but was periodic, (with intermittent spells of problem drinking, often in response to stress). While this pattern is not unique to older people, the particular stresses may be different and perhaps more frequent if not simultaneous in old age. Life stresses, such as loss of spouse, family and friends, income, employment; changing social norms of physical beauty; decreased mobility, health and stamina, changes in valued roles, home and neighborhood, independence, self-esteem, and others are more usual and more frequent in later rather than earlier years. People whose habitual coping response to stress involves drinking may, therefore, become especially vulnerable to drinking problems in old age. Gerentological research data show that as people age, their sense of individualism increases and they are less influenced by their peers. Lifelong reactions to stress and choices of coping mechanisms should become even more pronounced as an individual ages (assuming no intervention has taken place). If alcohol has been a primary coping response throughout life, it is likely to persist and perhaps intensify well into old age.

Third, "reactive drinkers" are problem drinkers who may have a history of emotional problems but began drinking in later years, perhaps as a response to the stresses of aging. In view of the many stresses and the disproportionately high number of women in the older population the older women may be particularly at risk. "Reactive drinkers" of late onset generally have a good prognosis for treatment outcome and are a viable target for primary prevention efforts such as pre-retirement counseling and education.

Diagnosis of alcoholism is much more difficult in the elderly than in younger age groups (54a). Specific and appropriate criteria for diagnosis of alcoholism in the elderly do not exist; and the four diagnostic methods most commonly used for the general population are quite limited in their application to the elderly (55). For example, consumption of alcohol in terms of quantity and frequency may be a viable diagnostic approach with the general population, however, in view of the heightened effect of alcohol on the older person, using general population criteria is likely to result in misdiagnosis or incorrect diagnosis of the older alcoholic. The greater probability among older persons for increased toxicity due to alcohol-drug interactions may further reduce the applicability of the consumption norms of the general population. With respect to the older woman, for whom the heightened effect of alcohol as a consequence of age may be superimposed on the greater sensitivity of women in general to the effects of alcohol, these norms may be especially inappropriate.

A second commonly used diagnostic method, the use of psychological dependence or repeated efforts to stop or control drinking as indicators of heavy drinking, is difficult to implement in any population.

A third diagnostic method focuses on the identification of physical addiction through symptoms such as those characteristic of withdrawal. Such symptoms, however, are infrequent and can be particularly subtle in older persons.

Finally, use of "life problems" such as divorce, arrest, accidents, job loss, etcetera as indicators of alcohol problems is of limited utility in diagnosing elderly alcoholics. For example, many older persons are not in the work force and few receive traffic citations for driving while intoxicated. With respect to older women, many may be widowed and living alone, thus having less opportunity for family or marital discontent and little visibility to potential sources of referral.

Further compounding the difficulty of diagnosis is that many of the various chronic conditions experienced more often in old age frequently have symptoms similar to those characteristic of alcohol problems. Depression, malnutrition, and drug reactions are among those conditions with similar symptoms. Consequently, an older woman who exhibits signs of disorientation as a result of an alcohol problem (a treatable condition) may be misdiagnosed as having Alzheimer's disease (an untreatable, irreversible condition). Without early detection and proper treatment, the initial and reversible effects of alcohol can, in fact, progress to untreatable organic brain syndrome.

Adverse affects. What are some of the adverse effects of alcohol in the older woman? According to a report of the Institute of Medicine (IOM) (54a), "there is remarkably little information on the biological effects and medical complications of alcohol use in the elderly." As mentioned previously, it is particularly difficult to separate complications of aging in an individual from complications of alcoholism. The

IOM report lists some of these complications including: malnutrition, impaired host defense, increased carcinonma liver disease etcetera (54b). As the report suggests, the combined effects of aging and alcohol use appear to decrease the resiliency of all body systems resulting in a decline in both physical and emotional resources. Problems with the central nervous system, the circulatory system, the liver, the gastrointestinal tract, and the kidneys also are more common in older than in younger alcohol abusers. Sleep disturbances resulting from alcohol are more common in the elderly and, under the influence of alcohol, older people tend to go to sleep sooner and sleep longer than younger people (56). The compounded effects of alcohol and sleep coupled with the elderly's increased susceptibility to hypothermia could clearly increase the mortality rates of older persons unaware of the danger of this condition.

Depression, an increasingly prevalent mental health condition in older women, coupled with alcohol abuse can result in a vicious cycle. Unlike men, who seem to experience depression after life-long heavy drinking, women appear to drink as a reaction to depression thus perpetuating the cycle.

The potentiation by alcohol of psychoactive drug effects may also represent an additional danger for older women. Use of alcohol can interfere with the drugs that they are taking for medical purposes. As the environmental stresses increase in later years, women whose habitual coping responses to stress involved drinking or drug taking may be even more vulnerable to these problems in old age. Most of the psychoactive drugs taken by the elderly women to combat depression, for instance, are potentiated by alcohol, resulting in overdose incidents.

Problems due to alcohol consumption in the elderly extend beyond those identified as alcoholism or heavy drinking. Relatively healthly elderly individuals suffer serious cognitive and behavioral impairments from even moderate amounts of alcohol (55). Older persons with heart or pulmonary disease can also experience adverse effects from moderate amounts of alcohol (55, 57). Difficulties in coping with the various losses that occur as a result of old age can be exacerbated by relatively minimal alcoholic intake. When compared with age-matched non-drinkers, elderly alcoholics have higher rates of affective disorders and acute and/or chronic brain syndromes.

The psychosocial aspects of alcoholism are closely tied to the physical and mental effects of the disease resulting in a cycle of continued alcohol use and concomitant illness and depression. In addition, alcoholics, older people, the physically and mentally impaired, women, the poor and minority groups are subject to various degrees of social stigmatization and discrimination. Not surprisingly, an individual who fits into two or more of these categories experiences intense negative reactions from society. For female alcoholics who are also elderly or poor, or members of a minority group or all three, social stigmatization is especially severe.

Another major concern is that the elderly are at especially high risk for alcohol-drug interactions (45c). The harmful effects of drug interactions in themselves present major threats to older persons. Approximately 25 percent of people 65 years of age and older are on some form of medication and the elderly consume more over-the-counter and prescription drugs than do any other age group. Elderly women use antianxiety drugs, antihypertensive medication, vitamins, analgesics, cardiac drugs, cardiovascular dilators, diuretics, laxatives, and tranquilizers at a rate of 2 1/2 times that for elderly men (58). As an added complication, more older women than men live alone and are more likely to make medication errors. In addition to taking multiple drugs, older persons often exchange drugs with friends thereby increasing the potential for drug-drug and drug-alcohol interaction. This high use of drugs, especially by older women, increases their potential for experiencing serious and sometimes life-threatening drug-alcohol interactions (59).

Services and treatment. The identification of older persons with alcohol problems can be considerably more difficult and require different approaches than case-finding among younger persons. Older people are simply not as visible as are younger people. More older than younger persons live alone and are isolated from friends, family and society in general. Many indicators of alcohol abuse in members of the general population, such as problems at work or school, do not apply to older persons. Family members may be reluctant to refer their parents or grandparents for alcohol treatment. Also, few physicians, nurses, and other health and social service caregivers have been trained to recognize symptoms of alcohol problems in the elderly. Stereotypic attitudes of providers that paint the older alcoholic as helpless or hopeless may interfere with treatment even when the alcohol problem is recognized and referred for treatment.

Problems other than health are also associated with alcoholism in the elderly population. Older alcoholics (particularly men) may sometimes engage in confrontations with companions and with the police, situations such as these can provide opportunities for case-finding. As examples, family, friends, and health care providers can be better educated to identify symptoms of alcoholism and should be encouraged to make timely, appropriate, and acceptable referrals for treatment. Providers of social and other aging services, including staff at senior centers staff and those providing in-home services, should also be trained to recognize symptoms of alcoholism and make appropriate referrals. While the process of identification of older problem drinkers might be similar to that for young people, the sites and resource persons will need to be different.

With respect to treatment for alcoholism, the full range of services, including detoxification, residential care, outpatient therapy, aftercare and follow-up, is as appropriate for older as for younger women. In fact, most therapists who have worked with elderly alcoholics concur that the prognosis for older people, particularly those with late onset problems, is as good or better than that for younger individuals (60-62).

Again, however, each component of treatment should be tailored to the specific situation and life circumstances of older woman.

Even more than with younger clients, counselors of older problem drinkers need to know about and collaborate with a wide range of medical and social services and be skilled in "social" therapies (63,64). Similarly, counselors need to be keenly aware of older clients' health and medical regimens and the drugs they may be taking. An increased emphasis on nutrition education would also be helpful for older people.

In working with older women, it is particularly important for counselors to demonstrate that they care, but at the same time discourage the client from becoming dependent upon them. It has been suggested that using a team of counselors with a group of older clients might help preclude dependency relationships.

The goals of therapy may differ from those for younger problem drinkers. For many older people, these goals may be less "work" oriented and more in line with retirement and leisure pursuits. On the other hand, it is possible that a number of older women may need or want to pursue work oriented goals. In our society, older women, particularly widows constitute a significant portion of the poor. Moreover, it is not unusual for problem drinkers to have some degree of financial difficulties resulting from their histories of drinking. Older female problem drinkers, therefore, may need additional income if only temporarily. For those women who previously have not been employed (which will be the case for a number of today's cohort of older women), special help with respect to seeking jobs and maintaining skills as well as ego support and assertiveness training may be most appropriate.

Alcoholics Anonymous (AA) participation works as well for older women as it does for younger women. Some tailoring here might also be helpful and should always be initiated by or in concert with an AA member. Ensuring that older women present their "stories" at speakers' meetings can play a vital role in helping them identify with other female alcoholics and begin working on their own problems. It is often threatening for problem drinkers of any age to attend their first AA meeting. Having a peer escort from AA accompany the older women helps to alleviate that problem.

For older women, treatment programs may be best conducted in settings other than the alochol service center. Senior centers, residential facilities, congregate meal sites, and churches are examples of places that might be more familiar to older women. Given the high incidence of alcohol problems in nursing homes, it would be helpful to establish therapy programs in them as well. Further, some of these settings, particularly the senior centers, offer the additional benefit of housing a number of services needed by older women, including transporation. For evening meetings, the availability of transportation and a safe and appropriate setting are especially important to elderly women.

There is an increased importance for follow-up and aftercare of older women who are problem drinkers especially for those who live alone (43b). A "slippery street" for problem drinkers of all ages is unstructured time. Because of the significant amounts of unstructured time in the lives of most older people, therapists and aftercare counselors might be even more directive in helping older clients structure their days. Assisting clients to engage in social activities such as those offered through senior or recreation centers, clubs, churches, and voluntary organizations will not only provide purposeful direction to dangerous unstructured time, but will also help isolated older women build or rebuild a support network and a sense of usefulness.

Drug Use and Misuse

The issue of drug use and misuse in the elderly has become an increasing public health concern (65). Although the elderly are commonly assumed not to be users of illicit drugs, they are generally recognized as having a high level of use of legal drugs which are legally acquired. In fact, when speaking of the elderly, it seems more appropriate to speak of drug misuse than of drug abuse (66). To avoid any confusion, the terms drug misuse and drug abuse will be defined according to the definitions adopted by the Federal Strategy Council on Drug Abuse in 1979.

> "Drug abuse is the non-therapeutic use of any psychoactive substance, including alcohol, in such a manner as to adversely affect some aspects of the user's life. The substance may be obtained from any number of sources: by prescription, from a friend, over-the-counter or through the illicit market. The use pattern may be occasional or habitual."

Drug misuse is the inappropriate use of drugs intended for therapuetic purposes. Misuse occurs though inappropriate prescribing or use of drugs resulting from a lck of knowledge of the drugs' effects by the physician or the patient or through self-medication with a drug inconsistent with the label information.

The difference in use or misuse patterns between men and women is derived from the fact that there is a higher proportion of women (60 percent) among the U.S. population 65 years and older. Because of the longer life expectancy of women, the problems of the elderly are increasingly those of women. In spite of this fact, research has failed to adequately explore their unique health problems.

Adverse effects of drug interactions. Older persons (especially women) are at high risk with regard to harmful effects resulting from drug interactions (67). The elderly--those 65 years of age and older--constitute about 11 percent of the total population, yet they take about 25 percent of all drugs dispensed in the United States, both prescription and over-the-counter (OTC). It is the rare older patient who needs only one or two prescription drugs. For most, polypharmacy (a scientific way of saying "many drugs") is the rule, rather than the exception. A recent report on drug use in the elderly stated that for persons receiving more than one prescription, the average number of prescriptions written was 7.5, but for the elderly the average was 14.1 prescriptions (65). Other studies have shown that older patients may be getting as many as 14 to 18 different drugs in the course of a year. Nursing home patients have been reported to take as many as 20 to 30 drugs.

The reason why the elderly take so many drugs is not hard to understand. They are more likely than other age groups to have one or more chronic illnesses, including heart disease, high blood pressure, diabetes, and arthritis. Few such diseases can be treated with just one drug. Medication for chronic ills usually must be taken over long periods, frequently for the rest of the patient's life.

Elderly women may also be given prescribed drugs, such as estrogens to replace the diminished hormones after menopause and to prevent osteoporosis in later years. They use sedatives, hypnotics, antianxiety drugs, antihypertensive medication, vitamins, analgesics, cardiac drugs, cardiovascular dilators, diuretics, laxatives, and tranquilizers.

The very fact that the elderly must take so many medications increases their chances of experiencing an adverse reaction--chances three times greater than that of the younger patient. Such reactions may be severe enough to require hospitalization. These include: stupor; confusion or over-stimulation from sedatives; intestinal bleeding from aspirin; lowered blood pressure from antipsychotics such as chlorpromazine (Thorazine); and fainting following use of antidepressants, diuretics, sedatives, tranquilizers, and some high blood pressure medications.

Taking many drugs also increases the potential for drug-drug interactions. One drug can alter the effect of another, for instance, by speeding up or slowing down its metabolism in the liver. Two similar drugs taken together may produce an effect that is greater than would be expected or they might counteract each other.

The young as well as the old patient can experience adverse reactions, of course. The problems of the elderly, however, are compounded by the very process of aging. With age there are certain physiological changes that can affect the way in which drugs behave in the body. In addition, such factors as diet, alcohol consumption, disease, weather conditions such as high heat and humidity, malnutrition, and even bed rest can alter the movement of drugs through the body.

Women, according to Hamilton and Parry (68), have more adverse drug reactions than men, and, especially after menopause, may be more vulnerable to tardive dyskinesia, a disorder associated with use of psychoactive drugs.

Absorption and distribution of drugs. The elderly woman may be at risk due to variations in drug absorption and disposition. Drugs usually enter the body by mouth or by injection. The ability of drugs to produce the desired effects depends first on how well the drugs are absorbed. While there is little clear evidence that age alone affects absorption, it has been suggested that decreased absorption might occur as a result of physiological changes such as decreased gastric acidity, a reduction in peristaltic activity; a change in the time it takes for food to leave the stomach; or a decreased intestinal blood flow.

Age does make a difference in drug distribution, the process by which drugs are delivered to various sites in the body. Distribution in the elderly is altered in part because of changes in the body's composition. With age, the total body water and lean body mass--essentially muscle and bone--decrease, while the proportion of fat increases, even though there is no increase in total weight. This means that drugs, such as digoxin, normally distributed in lean body tissue, will end up at higher concentrations in the bloodstream. On the other hand, barbiturates (Nembutal and others), phenothiazines (Thorazine and others), and diazepam (Valium) are stored in fatty tissue. The increased fat in the elderly can serve as a reservoir for these drugs and prolong their "working" time.

Drug distribution is also affected by the plasma protein concentration. Plasma proteins in the blood aid in transporting many drugs from the intestines throughout the body. A certain percentage of the drug is always bound to the protein. Only the unbound, or free, portion of the drug is active. Thus, binding is important in determining how much of a drug will be available to produce the desired effect.

With age there is a decline in the amount of albumin, one of the blood proteins to which some drugs are highly bound, e.g., Dilantin, the anti-epilepsy drug, Valium, and anticoagulants (Dicumarol). A reduction in albumin will result in an increased amount of active drug, so what would normally be a therapeutic dose of the drug may prove to be a toxic one.

Still other toxicity problems may develop because drugs compete for these albumin-binding sites. When one drug is blocked at the binding site by a second drug, the amount of the first drug that is freely circulating increases, and the potential for toxicity along with it. For example, phenylbutazone, salicylates and sulfonamides can displace tolbutamide, leading to hypoglycemia (low blood sugar). The person who takes several of these drugs, thus has increased chance for toxic drug interactions.

Metabolism. Metabolism is another function that changes with age. Drug metabolism rates in the elderly are one-half to two-thirds the rates of middle-aged and younger patients. Metabolism takes place primarily in the liver where drugs are changed into a water-soluble form so they can be excreted. The capability of the liver to perform this vital function depends on the blood flow to that organ. In the elderly, this blood flow is decreased. Some drugs, including beta blockers, narcotics, nitrates, hydralazine, and tricyclic antidepressants pass through the liver before they reach the general circulation. Because of the reduced blood flow, smaller amounts of these drugs are metabolized and excreted. As a consequence, the amount that enters the elderly person's circulation is elevated.

Interactions of different drugs in the liver may cause still other problems for the elderly patient. One drug may stimualte the metabolism of another, thus decreasing its effectiveness. Phenobarbital has this effect on anticoagulants. On the other hand, the antibiotic chloramphenicol shows the metabolism of anticoagulants, thereby increasing the magnitude and duration of their effects.

Drug elimination. Finally, the body's processes for elimination of drugs can be impaired in the elderly because of changes that occur in the aging kidney, changes that are more dramatic than those in any other organ. The kidneys become smaller, blood flow and filtering capacity decrease. This kidney impairment retards the elimination of water-soluble drugs such as digoxin, certain antibiotics, chlorpropamide, and hypotensive agents, leaving the elderly patient more prone to adverse drug reactions.

Drug sensitivity. The elderly also appear to be more sensitive to certain drugs. For instance, anticholinergic drugs can cause confusion, disorientation, hallucinations and delirium, as well as blurred vision, dry mouth, palpitations, and constipation in the elderly. Examples of anticholinergic action may be found in medications for spastic colon and Parkinson's disease; some antihistamines; tricyclic antidepressants; and drugs to control irregular heartbeats. Older women in particular seem to be especially sensitive to Valium, and thus require smaller doses of this drug than do younger patients. Older patients may experience fainting and dizzy spells from drugs such as anti-depressants that do not usually produce such effects in younger patients.

Nonprescription, or over-the-counter (OTC), drugs have a prominent place in the medicine cabinets of most elderly people. Analgesics (painkillers), antacids, cough and cold preparations, and laxatives are among the OTC drug products most frequently used by older people. While many people do not think of these as drugs, OTC drug products, too, can be the cause of adverse side effects in older patients.

Aspirin, for instance, can increase the effect of anticoagulants and decrease sodium and chloride excretion--a matter of concern to those with congestive heart failure. Chronic use of aspirin may lead to iron deficiency anemia. Antacids can interfere with the absorption of some drugs, such as the antibiotic tetracycline, while chronic use of laxatives can lead to electrolyte and water balance disturbances.

Although many older women may have some vitamin deficiencies, treatment with megadoses of vitamins is generally not recommend. As mentioned in the section on nutrition, older persons may have the misconception that taking more vitamins than prescribed or suggested on the label is beneficial and thus suffer the ill-effects of overdoses of certain vitamins.

Prevention of adverse drug reaction or misuse. It would seem that the best way to avoid adverse drug reactions in older patients is simply to reduce the amount and number of drugs they take. This may be accomplished, to some degree, by a coordinated system of geriatric care, so that each physician is aware of all drugs, both prescribed and OTC drugs, that the patient is currently taking. Another way of keeping track of the numerous prescription drugs an older person takes is by enlisting the help of the pharmacist. Numerous pharmacies have installed computer systems which allow the pharmacist to monitor drugs prescribed to individual patients and to identify possible cross reactions among these drugs. Unfortunately people do not always go to the same pharmacy.

Perhaps the best approach to reducing the numbers of older women who misuse drugs is to increase the level of communication between women patients and health professionals. Unfortunately, communication is often hampered by the negative sterotypes that physicians and other health care personnel may have of older women and by the tendency of physicians to discourage women from asking simple questions about drug use. Women themselves are often reluctant to ask questions and harbor stereotypes of physicians that prevent them from asserting their rights to information about the medications prescribed for them.

Care for geriatric patients poses other problems that may lead to drug misuse. Too often, an older woman may see more than one doctor for the same ailment with neither doctor or patient keeping track of all medications that have been prescribed.

Clearly, improved communications between older women and health care providers, particularly physicians, will require a two-pronged approach. Health care providers must strive to give drug information in a way that is readily understandable by older women. They must also develop special sensitivity to patients who are confused or who have difficulties with language. For their part, older women must learn to be more insistent about getting exact directions for the use of prescribed drugs and must make sure that they follow these directions precisely.

A final facet of drug misuse in the older person is the drug itself. When a drug is tested for safety and effectiveness, its appropriate dosage, desired frequency of use, and potential side effects are determined. Physicians rely on these standards in prescribing drugs for their patients. Some drugs used by older persons have not been tested extensively in this population or in women. The Food and Drug Administration is currently working to establish guidelines that will enable drug companies to develop appropriate protocols for testing drugs in the elderly.

Mental Health Issues

Throughout the life span, the interrelationship of physical and mental health is apparent and well documented in the research literature. This interrelationship is particularly evident in the aging population. The study of interaction of psychosocial stress and health and aging over the life course are both inherently interdisciplinary and are concerned with the interplay of social, psychological, and biological phenomena in determining human behavior and function. Much of the last two decades of research on aging shows that social, psychological and even physical functioning do not invariably decline with age. Continuity between early and later stages of life is greater than often believed, and most people over age 65 (or even age 70) experience little or no significant decrement in physical, psychological, or social functioning (66). Variations by age in mental health, other than organic disorders, are not as clear, consistent, or regular as changes in physical health. Prevalence studies of various psychological disorders have failed to find consistent relationship with age, especially during adulthood, although at very old ages (beyond 75) certain mental disorders, such as senile dementia, are pronounced (66).

Despite the fact that our knowledge about the biological, psychological, and social processes associated with aging has greatly increased in recent years, the understanding of the mental health problems of aging remains diffuse, particulate, and uncoordinated (67). Incidence and prevalence studies are beginning to yield valuable data and there does not appear to be any significant difference in the occurence of mental health problems between older men and older women.

There are no alcohol, drug abuse, and mental health (ADM) disorders unique to older women. However, there are several disorders which are more prevalent in, or affect older women differentially or both, primarily due to demographic and socioeconomic situations. In the most comprehensive text on mental health concerns of aging (67), there are only 11 references to "gender" or "sex roles" as a factor in mental illness morbidity, diagnosis, treatment, or utilization of services.

Depression. The most common form of mental disorder in older women is depression. There is a wide range in the estimates of the occurrences of depression among older populations--from an incidence rate of 10 to 65 percent for mild to moderate severity and 1 to 3 percent for serious depression.

Depression is not always easy to diagnose and the disorder is frequently confused with dementia; adequate assessment and accurate diagnosis are critical factors in early intervention. Certain medications that an older woman might take can also affect her mood. For instance, reserpine, a drug used to treat hypertension, sometimes causes depression. In other cases, where several medications are taken at the same time, the combination of drugs can cause mood changes.

Depression is a treatable illness. However, only 25 percent of those with a level of depression serious enough to require treatment ever seek help (68). Among the older populations, failure to seek treatment is more prevalent for a number of reasons. Often depression is misdiagnosed as senility (organic brain syndrome) or is mistaken for the everyday problems of the aged (68). Depression is frequently accepted by the elderly themselves as normal or as a condition about which they can do nothing. Symptoms of depression are often attributed to physical problems; in fact, depression and physical health problems are frequently so interwoven in the elderly that each aggravates and compounds the resultant disability of the other.

Treatment of depression in the elderly must be handled with particular caution (especially if antidepressant drugs are prescribed) because of possible complications from treatments they may be receiving for physical ailments. However, accurate diagnosis and adequate treatment can result in relief of the disabling symptoms of depression. In a PHS report, "Older Women: Discontinuities and Continuites" (69), a section on treatment of depression discusses the role of psychiatry:

> "Recent developments in psychiatry also have resulted in improved treatment of depression, including psychopharmacologic and psychotherapeutic interventions. However, the cutoff age for comparative studies of these therapies is generally age 60, and often even age 50....One reason for "this age limitation is that the accompanying medical problems common in older patients require close monitoring of side effects. Therefore, many questions remain: is pharmacotherapy equally effective in the acute and chronic treatment of the depressed elderly? Do older people require different dose schedules, as has been suggested? Why are the depressed elderly less frequently offered psychotherapy? Is there any evidence that psychotherapy is less effective for older people? What about the role of self-help and support groups? Certainly the loss of social supports through death and changes in roles and living arrangments, would seem to make psychotherapy extremely important in this group. Family genetic studies need to be reviewed for cohort effects."

The close interaction between mental and physical health is particularly evident in older women who are depressed. Depression can lead to social isolation or withdrawl or both, as well as inattention to basic nutrition and sanitation, thus causing physical decline and confusion. Depression can also lead to increased reliance on sedatives and alcohol consumption.

The literature indicates that there are sex differences in terms of prevalence of depression, and both sex and age differences in types, severity, and symptomology of depression. Causes of these differences remain unclear.

Suicide. The possibility of suicide is the most common complication of depression. Currently available statistical data (70) show that suicide among the elderly seems to be primarily a problem of White males and one which rises precipitously with age. However, ongoing studies of women may begin to show that more women than men suffer from depressive disorders and attempt (but do not successfully complete) suicide. In 1982 the rates of suicide for older Americans ranged from 15.9 per 100,000 in the 55 to 64 age group to 19.7 per 100,000 in the 75 to 84 age group and 17.2 per 100,000 in the 85 years and older age group (as compared with the general rate of 12.5 per 100,000). While the White population over 50 comprises 23 percent of the total population, 40 percent of the total suicides are in this group. White males over 50 comprise 10 percent of the total population and are responsible for 30 percent of the annual suicides.

Based upon what is now known about suicide, a trend analysis (utilizing data from the 1970's) indicates that the following per unit of increases in suicide will occur into the decades of the 1980's and the 1990's: In the 70 to 74 age group there will be a 14 percent increase for both sexes: a 17 percent for males and an 8 percent for females. In the 75 to 80 years age group, there is an 11 percent increase projected for both sexes (males 18 percent, females 14.2 percent).

The problems of the elderly which are major risk factors for suicide include: unrecognized and untreated affective disorders, physical illness, the general stresses of aging, bereavement, and isolation. General preventive measures are needed including better identification of mental and physical disorders (primarily affective disorders), changes in current negative social attitudes toward the aged, and dissemination of information on suicide and depression to lay people and professionals who are in positions to provide help.

As mentioned, a major risk factor in this already high-risk population is bereavement. There is an increased risk of suicide in the surviving spouse for four years after the death of a partner. In the first year after the death of a spouse, the relative risk of suicide is 2.5 times greater than in the general population. In the second year, it is 1.5 times greater. Given the demographics of the aged population, the fact that husbands tend to be older than their wives, and males in general die at an earlier age than females, bereavement over loss of spouse is a greater problem for women than for men (70 percent of women over age 75 are widows compared with 20 percent of men in the same age group) (71).

It is alarming to learn that physicians had seen 50 percent of elderly suicides within the week prior to the event and 90 percent in the three months prior to the suicide. Clearly, physicians and other health professionals need training in identifying clues to pre-suicidal behaviors and in developing improved methods of intervention.

The elderly have been largely ignored as a population for planning studies of depression and suicide even though the possibility of suicide increases with age. Issues of assessment, diagnosis, treatment, and prevention of suicide and depression among the elderly need to be systematically studied.

Sub-populations among the elderly, such as Blacks, Hispanics, and Asians and have also been virtually ignored as far as collecting any meaningful data on suicide. The National Center for Health Statistics (NCHS) has only recently begun to collect information on any of the disadvantaged or minority group populations in any age group in this area. Epidemiological risk factors related to physical and mental health of minority group populations have not been firmly established. Gaps in the data which have been gathered are so striking as to render the information obtained virtually useless.

According to unpublished data of the NCHS, in 1981 comparative suicide rates for men and women per 100,000 population were:

	55-64	65-74	75-84	85 +
Men	25.0	28.4	41.4	50.2
Women	8.8	6.8	5.2	3.8

Schizophrenia. Initial onset schizophrenia in older women is relatively infrequent. Until recently, clinicians avoided making a diagnosis of schizophrenia in persons beyond the age of 40 or 50 (67). Paranoid or other delusional symptoms were diagnosed as organic in causation. In a 1940s study the term paraphrenia was used to describe schizophrenia-like symptomology characterized by paranoia occurring initially of the age of fifty.

Up to the age of 35, schizophrenia occurrs more frequently in men. After that age the disorder is seem more often in women (67).

Causes of schizophrenia in late life are as little known as are the causes of this disease in younger populations. While there appears to be a slightly higher incidence of late life schizophrenia in siblings than in the general population, there is no evidence that the disease is simply a matter of inheritance.

Since the advent of psychotropic drugs, the outlook for treatment and management of paraphrenia has improved. There are no accompanying physical problems with paraphenia *per se*. Side effects of the drugs are the major complications in treating elderly women with psychotropic medication, and careful monitoring of the patient is essential.

Senile dementia. Senile dementia is not a normal part of aging and is not a condition that invariably occurs in later life. (See paper on Alzheimer's Disease in this report). Although only about 5-6 percent of older persons develop senile dementia, this is a significant number of people, for a disease that is devastating to the victim and his or her family. More women than men are victims of senile dementia because there are more women than men over age sixty-two.

Alzheimer's disease, the most common form of senile dementia, is discussed in chapter four and is discussed here only to emphasize the need for careful assessment of the older woman whose condition may be diagnosed as dementia. Many other conditions, both physical and mental, can mimic senile dementia at its various stages. It is essential that psychological, behavioral, and physical changes in the older woman be carefully evaluated to avoid erroneous diagnosis and inappropriate or negligent treatment.

The onset of senile dementia is generally slow and gradual, and there are no definitive physical, laboratory, or psychometric diagnostic tools as yet. Elimination of other possible causes is the current diagnostic procedure. In contrast sudden mood, cognitive, behavioral, or physical changes in an elderly person are generally indicative of an acute condition (such as injury or neoplasm) and prompt medical treatment is indicated.

Memory loss, confusion, disorientation, and physical decline are all symptoms of senile dementia. They may also be symptoms of depression, a treatable mental disorder, discussed earlier in this section. It should be noted that depression is frequently concomitant to dementia, particularly in its early stages when the victim is aware of her congnitive deficits. Proper treatment of the depression can lead to relief of those symptoms and a temporary improvement in congnitive function and behavior.

Organic brain syndromes. Senile dementia is one of the most over-diagnosed and misdiagnosed disorder. Part of the problem, already alluded to, is that the symptoms of many other disorders, especially head injuries and conditions which cause irritation to brain tissue, resemble those of senile dementia. The crucial difference though, is that many of these disorders may be reversed or cured with appropirate treatment. Conditions that bring about abnormal and identifiable changes in brain tissue are called Organic Brain Syndromes (OBS). OBS represents a broad category of diseases and includes senile dementia. Other OBS disorders that have symptoms similar to senile dementia, but which, at the same time may be reversible, include the following:

- trauma--injuries to the head.

- infections--especially viral or fungal infections of the brain.
- metabolic--thyroid problems, nutritional deficiencies, anemias, etcetera.
- drug side effects--wrong dosages of drugs or combinations with certain other drugs which cause adverse side effects; also alcohol.
- toxic reactions--carbon monoxide, methyl alcohol, etcetera.
- circulatory disorders--strokes, heart problems, etcetera.
- tumors--any type within the skull.
- neurological disorders--normal-pressure hydrocephalus, multiple sclerosis, etcetera

In addition to organic brain syndromes, several functional psychiatric problems may also be confused with senile dementia. A classic example is "pseudo-dementia," a severe form of depression which, in the elderly, appears identical to senile dementia, but unlike senile dementia it can be reversed if treated appropriately (75).

Mental health services. Mental health care is one of the most neglected health needs of Americans. In a recent hearing before the Senate Subcommittee on Aging of the Labor and Human Resources Committee, Alexander Fleming, former Secretary of the Department of Health, Education and Welfare stated, "that despite evidence that the mental health problems experienced by the majority of the aging population can be effectively treated and reversed, this population is not receiving appropriate mental health care."

Mental health care and services for the older woman are provided in one or more of four settings: home, short-stay hospital, long-term care facility, or state mental hospital. The number of mentally impaired older women being cared for at home by family members is unknown; however, since 95 percent of all persons over age 65 are living in the community, even a conservative estimate of 10 percent who might require community-based mental health services yields over 2,000,000 potential clients.

The President's Commission on Mental Health Task Panel on the Elderly, found that the elderly are, "unserved, underserved, or inappropriately served." Community mental health centers (CMHC's) are the primary community based treatment resource; however, while the elderly comprise

11.7 percent of the total population, they comprise only 4.0 percent of the recipients of service from the CMHCs. Explanations for this include: failure of the elderly themselves to recognize symptoms as problems related to mental health; ignorance about availability of services; stigma associated with utilization of services; inaccessibility of services; fear that seeking services will lead to institutionalization; failure of CMHC staff to be sensitive or knowledgeable about special needs of the elderly.

In the private mental health care sector, care for the elderly is almost non existent. Psychologists and psychiatrists are often unwilling or feel unprepared to treat elderly clients. Only 2 to 5 percent of private psychiatric services are devoted to the elderly (76).

Similarly, on the psychiatric services of general hospitals, the population of those 65 years or older is underrepresented, although they are over-represented on the general medical-surgical services. Possible explanations for this phenomenon include the fact that sudden, acute psychotic episodes that usually trigger psychiatric hospitalization are less frequent in the elderly than in younger persons, and exacerbation of chronic problems frequently accompany physical ailments which are treated medically, not psychiatrically. Community hospitals are traditionally structured as if illness which requires treatment is either physical or mental. Few of these hospitals are set up to treat both. In the elderly, physical and mental health problems frequently co-exist and one or the other goes untreated or is inadequately treated.

Nursing homes (skilled nursing facilities and intermediate care facilities) have replaced state mental hospitals as the main institutional site for the elderly who are chronically mentally ill. More than one-half of the 1,300,000 nursing home residents (5 percent of the elderly population) have a chronic mental illness (including senile dementia) and 90 percent are classified as disabled for mental reasons (77). The average age of nursing home residents is eighty-four. Eighty-six precent of all residents are over age 65 and 90 percent of these are over age 75; 72 percent of nursing home residents are women. There are no full-time, board-certified psychiatrists in the 23,000 licensed nursing homes in the United States. The educational level of all personnel in long-term care facilities is generally below that of either general hospitals or state mental hospitals, with annual turnover rates approximately 75 percent. Specialized mental health training is rare. It is clear that the mental health needs of older women in nursing homes are essentially unmet.

Summary and Conclusions

The prolongation of life presents a new variety of health and welfare problems. Studies have shown the aging person is, in general, confronted with a relinquishing of social roles and relationships, increased social isolation, decreased income, anxiety over possible loss of health, and possible incapacity (78). These changes occur at a time when the older person's resources may be rapidly declining and dependency increasing. As a consequence, the care of the aging and particularly the aging who are ill is becoming the responsibility of organized society.

Almost one-third of the total national health care expenditures are accounted for by the elderly. While both sexes utilize health care services more with advancing age, elderly women have a greater utilization rate. The elderly have more "bed disability" days, twice as many hospitalizations that last twice as long and visit physicians 50 percent more often than young people (79).

Since women have more chronic diseases, live longer than men, and have lower mortality rates for most causes of death, they need a comprehensive range of health care services (80). Accordingly, the use and availability of health services for older women need to be examined.

Requirements for the development of services. In comparing the health needs of different age groups of older women, there are sharp differences between those 80 years or older and those 60 to 69 years of age. Available services should be fully developed as a continuum based on models related to the need for care. Services must range from simple information about how a woman can help herself to direct health care aid for more serious health problems.

In the development of services, distinctions between needs resulting from life styles and those caused by the process of aging must be considered, as well as the interplay of biomedical, psychological, and social factors affecting health of older women. Older women are far more likely than older men to live alone, and often lack adequate support systems. This isolation makes the treatment of physical and mental illness more difficult. It may also be a precipitating factor related to the increased number of women who are institutionalized. Older women in poor health find it more difficult to stay in the community since they have fewer social and financial resources than men. They also have more functional limitations, and more problems with daily living which contribute to institutionalization.

Service providers need to assess the kinds of personal and social supports that give older women the option to remain in the home and maintain autonomy, while receiving the care they need. Studies have shown that, given appropriate services, many elderly women can manage successfully at home.

The utilization of health care resources by elderly women will be examined mainly through the use of three major health care settings: physicians' offices, hospitals, and nursing homes. Data for this review were obtained from three sample surveys conducted by the National Center for Health Statistics: the National Ambulatory Medical Care Survey, the National Hospital Discharge Survey and the National Nursing Home Survey (81).

The number of older women surpasses that of men in utilizing various types of short-term care (visits to physician's offices, clinics, dentists and drugs). They have more acute and chronic conditions than older men, and seek health care earlier than men, (more often in the middle years), which may reduce their rate of deterioration and increase their life expectancy. Elderly men seek less preventive care which may be why they have higher morbidity rates. The number of hospitalizations and the use of hospital resources are higher for elderly men because they are more seriously ill when they are admitted to hospitals.

The private physicians' office. Older women seek care most frequently in physicians' offices. Treatment in physicians' offices is most likely to be for chronic conditions such as hypertensive disease, heart disease, diabetes, and osteoarthritis. In 1978, the national average was 3.2 physician office visits for each female in the civilian noninstitutionalized population of the United States. For women 65 years of age and older the rate was 4.2 visits per person. Visits for older women who were Black or members of other ethnic groups, however, were less than those by White women. The number of diagnostic tests and therapeutic services performed for women did not increase for elderly women over the number performed for all ages of women; although the nature of the tests changed; i.e., vision tests for older women, Pap tests for younger women.

Short-stay hospitals. Use of short-stay hospitals by older women is usually for episodes of illness requiring acute medical care (chronic ischemic heart disease, congestive heart disease, and cerebrovascular disease) or surgical intervention (malignant neoplasms, fractures, eye surgery). White women had shorter hospital stays than did Blacks and other women in ethnic minorities. The latter were more likely to die in short-stay hospitals. These patterns of use may result partially from the tendency of Blacks and women of all other ethnic groups to delay treatment until later stages of illness as well as because of problems of accessibility to services (10b).

Nursing homes. A hospital stay may be followed by a stay in a nursing home for the older woman. This is particularly so for elderly women who have few social and financial resources on which to rely. Older women also have more functional limitations, and thus more problems with daily living which contribute to institutionalization. Unlike elderly men who are more likely to have a spouse to care for them at home after a hospital stay, older women often have no alternatives to institutional care.

Seventy one percent of residents in nursing homes are women and most are over age sixty-five. Women in nursing homes are sicker and have more disabilities than older men. They are less able to take care of their personal needs (bathing, dressing, toileting) and they have poorer functional status because of their overall older age. The major conditions which old women in nursing homes present are arteriosclerosis, senility and chronic brain syndrome, and incontinence, all of which require continuous nursing services. White women are more often residents of nursing homes than are Blacks and others (10c).

The need for long term care (LTC) services is expected to grow dramatically in the near future in the United States. The most dramatic changes in population will be among those 85 years of age or older who will increase at a rate of 18 percent or greater every 5 years between 1980 and 2000. The projected need for increased LTC services is projected on the increased number of the very elderly but also on the number of elderly having disabilities. Elderly women dominate in both groups. The complex interweaving of health and social factors both in the causes of disability and in its management, necessitate that long-term health care be provided in the context of family, community and cultural life patterns (82).

Utilitization of health care resources per capita among the elderly can be expected to increase because of the increase in the educational and income level of the elderly and their increased participation in broad health insurance plans. These changes will tend to lead the elderly to seek more comprehensive and technical health care services and to rely upon complex public and private institutions.

Studies have shown that given appropriate services, many elderly can manage successfully at home. In fact, states are finding it easier to obtain waivers from the Federal government to implement innovative cost-containment strategies such as plans to pay for home and community-based services for the elderly as alternatives to nursing home care. Some of these alternatives are described below.

Day care centers. Day care centers are primarily social programs for frail, moderately handicapped, or slightly confused older persons who need care during the day or some part of the week. This type of care provides relief for the families of older individuals yet allows the older persons to live at home (83).

Homemaker-home health services. Since the passage of Medicare, homemaker-home health services combined with health aid services have expanded, but they are still not as extensive as needed. Both provide preventive and treatment services yet permit the aged to live in their own homes. In the United States in 1976 there were 28.7 of these homemakers per 100,000 people (84a).

Homemaker services are provided by mature, trained women with skills both as homemakers and in personal care. They operate under the general supervision of a social worker or other appropriate health care professional. Home health services generally refer to personal care services for a patient and may be used to include some of the services performed by a homemaker. Homemaker services may be used by the aged regardless of income or social status. These programs, however, are in short supply and distribution is poor. Some geographic areas of the country and large sections of the population have no such services available at all. While there have been some evaluation and cost benefit studies conducted to determine whether these types of programs are cost effective, i.e., help delay, postpone, or eliminate the need for institutionalization, results so far are by no means conclusive (84b).

Self-care. In an effort to promote more efficient and economical use of primary care facilities, self-care programs have been developed and initiated for the elderly, especially elderly females. The self-care programs are based on the belief that training the elderly to prevent, detect, and treat common illness and injury would reduce the demands placed on primary care resources. Another goal of such programs is the promotion of a high level of "wellness." Self-care programs for older women challenge existing sterotypes of older women as hypochondriacs. By taking more responsibility for their health, older women would change the image of being helpless and dependent, one of the manifestations of ageism and sexism (80).

Cost of services. The poverty rate among the elderly is presently lower than in 1970. Much of the decline occurred in the early 1970s. However, the poverty rates for the elderly increased in both 1979 and 1980 before falling back slightly in 1981. Factors contributing to this high rate include the increasing number of elderly single women in the population and the number of those who live alone. In 1981, 15.3 percent of the elderly (about 3,900,000) had incomes below the poverty level. Even if the poverty rate declines by one-fifth (to 12.4 percent of the elderly) by 1990 the absolute number of elderly persons living below the poverty level would be no lower than in 1981 (85a).

Rising health care costs have caused the elderly to spend an increasing share of their resources on health care expenditures despite almost universal enrollment in Medicare. The average expenditure of elderly individuals for noninstitutional health care was over $1,000 in 1984, and this amount will be even higher for those in poor health. The groups among the elderly most likely to be poor and to have large health care costs are often those with the greatest need for home-based services.

Federal support for the care of the elderly who are moderately disabled is provided through Medicare and Medicaid. Dependent care, as discussed here, is defined to include the services which would help the elderly remain in their homes rather than being institutionalized. The services include housekeeping and homemaker services, home-delivered meals, and respite and adult day care services to relieve those who care for the elderly. Not all of these services are home-based, nor are they available and used by all disabled elderly who need them to remain at home.

The demand for dependent care services for the elderly will increase in the next decade or so based on demographic, economic, and social changes that are occurring. The increase in demand for such services will be affected by an increase in the number of the elderly over 80 years of age, the number of female elderly living in poverty, the increased proportion of women living alone or, with someone other than a spouse, and the reduced availability of family members (mostly women), who now work, to care for dependent elderly persons.

Two issues that arise relative to dependent care of the elderly are that the dependent are difficult to identify and current definitions of dependency and need for care among the elderly may be unreliable since they are generally based on self-reported information.

In the development of a Federal initiative related to dependent care of the elderly, according to a recent Congressional Report (85b), limitation of support to those who were truly needy and dependent would have to be specified in order to avoid a rapid escalation of costs (in an entitlement program) or a misallocation of limited funds (in an appropriated program). A large number of the elderly live alone, while others live near relative or others close to them. The needs are different. Accordingly an initiative would have to be designed in such a way as to avoid incentives for the elderly to alter their living arrangements and to substitute public care for care initiated by the elderly themselves or by their relatives.

Access to health care. Older women often face problems of access to health care. Because a great number of older women are poor, they often live in areas with few health providers and have to travel long distances to secure health services. They may face other barriers to access of health care: cultural differences, an inability to speak the language, and a failure to identify a source of care to use if needed. According to the Institute of Medicine, access to care may be further restricted for racial and ethnic minorities because of discriminatory practices (86).

As a result of the National Medical Care Utilization and Expenditure Survey, more is known about aspects of access to health care among noninstitutionalized elderly people who reported being covered by Medicare. The regular source of care for 3 out of 4 of elderly Medicare beneficiaries was a physician's office, while, for 9 percent, the regular source was a hospital outpatient clinic, (this excludes emergency room, health center, or "clinic"). There was little difference, if any, regarding age or sex in the distribution of such regular sources of care. However, Blacks were more likely than Whites to have a clinic as the regular source of care (16 versus 9 percent). Of the elderly Medicare beneficiaries, 10 percent reported no regular source of care (females 9 percent; Black 14 percent). The regular source of care was unknown for 7 percent of the elderly Medicare beneficiaries (females, 7 percent; Blacks, 3 percent).

Medicare. Among the elderly Medicare beneficiaries reporting, few stated barrier-related reasons (e.g., cost too great) for having no regular source of care. Eighty percent of those who said they had no regular source of care identified the fact that they seldom get sick as an important reason for having no regular source of care, while 24 percent identified the desire to go to different places for different health care needs.

More than 4 out of 5 (82 percent) elderly Medicare beneficiaries reported having some insurance plan in addition to Medicare (67 percent were covered by Medicare and a private insurance plan; 10 percent by Medicare and Medicaid; and 5 percent by Medicare and some other combination). Only 5 percent of elderly Medicare beneficiaries reported having one or more conditions which were medically unattended. One half of these related to access (transportation, cost, or could not get an appointment).

A societal response to the growing needs of health care for the aging, was the enactment of the amendments to the Social Security Acts in 1965 by the Eighty-ninth Congress. The legislation included health insurance for those over 65 years of age and provision for intermediary care, or "extended care" as it is commonly called. The concept of extended care grew out of recognition of a gap in health care services, particularly for the chronically ill and aged, between acute hospital care and home care (87). This concept stresses the need for the patient's rehabilitation and restoration to the highest level of independence that is possible to attain through activities of daily living.

Stereotyping. According to Heiple (80), the strong association among aging, chronic illness and poverty may be the basis for attitudes and practices that prevent older women from receiving optimal health care. Although it was hoped that Medicare would alleviate some of the financial strain of health care for the elderly, Medicare may also be contributing to such attitudes and practices by the quantity of paper work it requires, confusion, delay in billing, and restrictions on amounts of payment. Studies have shown that these attitudes are common in medical students and in all other health professions. A number of members of the health care team have shown negative attitudes toward the elderly. A study of medical care of the aged in the United States has shown that such care is characterized by negativism, defeatism, and professional antipathy. Two studies of medical and doctoral students, found that the students preferred not to work with older adults (88, 89). A study of nursing students also found similar preferences (90). This study, (90) which included various nursing personnel, i.e., licensed practical nurses, registered nurses, and nurse's aides, found that no one type demonstrated lack of stereotyped attitudes concerning the elderly but that the RN group were least willing to accept them.

Many health professional schools, however, are trying to change these negative stereotypes found in their students. A recent New York Times article (91) described a Gerontology Internship Program sponsored by Cornell Univeristy Medical College in which students became involved in the daily lives of their older patients. As one physician explained, "doctors need to change their mind-set and focus not simply on diseased organs, but on a person who exists in a social environment." Proper care for all older persons cannot be realized until health care providers develop this humanistic approach (88).

Another barrier to assuring that older women receive optimal health care may be sexism. Sexism in the health care system has been described as having both individual and institutional aspects. As recognized by Heiple, "Individual sexism is manifested by the attitudes of health care providers and by how they related to their female clients; institutional sexism is evidenced by the lack of specific research funds appropriated for the study of chronic illnesses and problems of women" (80).

Sexist stereotypes influence the medical profession to attribute illnesses and discomfort in women largely to psychological origins. On the other hand, women with certain problems that have psychological causes (such as loneliness and poor self-image) which can be treated by nonmedical interventions, are often referred to the health care services.

Future Cohorts of Elderly Women

This chapter has primarily addressed the concerns and health care needs of the older woman as we know her today. Historically the socioeconomic dynamics over time present new influences on the life style, attitudes and physical conditions for each generation (20). Chronic problems which appear earlier in life, persist over time.

Today's elderly woman, aged 75 to 84 was born in the early 1890's. Many of her cohorts were recent immigrants into the United States, many suffered from contagious diseases rampant at that time, and many endured the Great Depression. For the majority of these women, their lives centered around the traditions of the female's role as wife and mother. This was a period of low fertility, probably influenced by many of the socioeconomic difficulties resulting from the Depression.

By 1900, some interesting changes in the role of women in society were evolving. According to the Institute of Gerontology at the University of Michigan, 9.1 percent of women were the breadwinners in their families (the percentages are over three times as great for the Black woman of that time, 28.5 percent) (92).

The cohort that will be in the 75 to 84 age group by the year 2000 endured the traumas inflicted by World War II and later produced the numerous children that comprised the "baby boom." Many women joined the work force to support the war effort, and to replace the men fighting overseas. Nearly 2 out of every 3 of these women were over 35 years of age. Most were married and still regarded rearing their families as their primary life role and responsibility. Post-war America experienced tremendous economic growth which considerably changed many lifestyles.

The "baby boom" group will advance to their older years in 2020 to 2030. Women in this group are presently the fastest growing segment in the U.S. work force (92). Because of their participation in the work force, they may be subject to more of the stresses that currently affect men, and are perhaps at risk for more of the stress-related diseases. Women of this cohort bring greater freedom in life-styles and flexibility in the traditional family roles and structure. While this cohort will contain the largest number of women than any time in U.S. history, these women are having fewer children and thus are at greater risk for spending their older years alone. However, since many of them will remain in the work force, they may have greater financial security than today's older woman.

The children comprising the "baby boom" group are now about 35 to 40 and have generally lived well. They have benefited from major advances in medical sciences and health care delivery. They are exposed to more information about the adverse effects of drugs, alcohol, and smoking and the positive value of exercise, good diet and nutrition, and stress management. This group, in turn, is influencing the health and lifestyle of their young children. In spite of their knowledge about healthy lifestyles, however, this generation has also been influenced by a marked increase in alcohol and drug abuse.

The wide variety of life experiences among these three different adult cohorts result in different risks and health behavior which, in turn, will affect their health profiles as they age. Improvements in environmental conditions such as less pollution and less exposure to cancer producing elements should further reduce health hazards. Socioeconomic factors may affect policies governing work force participation, length of working time, and insurance coverage, thereby improving health status.

The implications for health care delivery are clear. Women, over time, are engaging in more active roles in the outside community and they will experience fewer acute, illnesses and the long term effects of fewer chronic diseases. With the greater emphasis on health promotion and disease prevention, the quality of their older years should also improve. Since more women are becoming educated, they will be able to take on more responsibility for their own health care and will also be able to interact more effectively with the health care system.

Perhaps the most emphasis in improving the health status of future cohorts of older women should be placed on the special populations of women (those in specific ethnic groups, minorities, the handicapped). Because they started out behind other groups of women in many areas which affect their health status (language, education, finances, social stereotyping, accessibility to care etcetera), they need special attention to narrow the gap in health status that exists, and without positive interventions, will continue to exist between them and the rest of the population.

The Impact of Future Technologies

One of the hallmarks of our society is the increasingly large role that technology plays in our lives. There is not doubt that the technological advances listed below will permit great strides in both longevity and the quality of life for older individuals. While the prospects for the future of health care are exciting, they must be tempered by considerations of cost for many of these new technologies. In addition, technology cannot be expected to substitute for preventive health care in which consumer information and education must play principal roles. Most importantly, future technology will become a useful part of the health care scheme for the older individual only when it is coupled with a system of compassionate, sensitive, and coordinated care on the part of the health care providers.

Technologies in Health Care for the Elderly

Home Health Care

- Kidney dialysis
- IV feeding
- Cancer chemotherapy
- Self-diagnostics (blood sugar, blood pressure, occult blood, testicular & breast cancer)
- Monitors for sleep apnea
- Microprocessor regulated devices (pumps for delivering chemotherapy or insulin, cardiac pacemakers, prosthetic devices, hearing aids)
- Cardio-respiratory monitors

Diagnostic Tools

- NMR coupled with monoclonal antibodies
- Real-time imaging capability for diagnostic imaging devices
- 3-D ultrasound
- Halography lasers
- Microchip "fingerprint" of patient's health based on normal baselines for 30,000 to 50,000 proteins in the body
- Digital radiography
- Teleradiography
- Radioimmunoassay (RIA's) and Enzyme Immunoassay (EIA) based on monoclonal antibodies to detect infectious agents, cancer, brain disorders, etcetera.
- Monoclonal antibodies--as drug delivery devices
- Genetic screening and potential therapy
- Beam (EEG plus high speed computer and video monitor)

Functional Aids

- Computerized prostheses (limbs, hearing and sight aids)
- Home robots or mechanical limbs
- Walking machines

Therapeutic Aids

- Prostheses for muscle, tendon, cartilage, bone, skin, blood vessels
- Electronic and magnetic fields as healing aids
- Vaccines from recombinant DNA technology

Information/Communication

- Computer programs on diet (93), nutrition, health promotion (e.g., "Healthaide")
- Computerized health behavior modification (e.g., Control Data, "Plato Stay-Well" Program)
- Videotext shopping (shopping through electronic kiosk)
- "Smart-cards"--plastic cards impregnated with microprocessors to keep health records
- "Electronic Cottage"--working at home via computers
- Picture phones

Strategies for Progress

To improve the quality of life for older women is a goal shared by all. In addressing the needs of older women (for the purposes of this report, those over the age of 65), the PHS should recognize the heterogeneous nature of this population. For example, the health needs of older women may differ according to the age cohort to which they belong (65-74, 75-84, and over 85) and may depend upon the ethnic or racial group to which they belong. The needs of the very elderly women whose risks are immediate and linked to long-term care issues differ from women in the 65-74 year old group who may be chronologically old, but currently functioning at a high level until they experience health and/or economic deficits. Other variables can also affect the older woman's health: her educational status, ethnic or cultural considerations, socio-economic status, and geographic location.

Information and education are critical aspects of any health promotion, disease prevention strategy. Efforts should be developed to educate and inform women of all ages on issues of particular importance to their health such as, (a) nutritional and dietary needs (especially calcium), (b) reproductive issues (i.e., STD's, contraception, menopause), (c) violence or abuse, and (d) exercise.

In addition, community organizations (consumer, government, insurance, health providers) oriented to women's health issues should be encouraged to actively identify women's health concerns and develop an approach for addressing these concerns. Indeed, public health awareness compaigns and education programs sponsored by government, the medical community, and community organizations should be aggressively directed to women, particularly economically and educationally disadvantaged women. In particular, organizations and government agencies sponsoring major public or professional conferences and conventions should ensure that women's health topics are included on the agenda and women invited to attend and participate. Professional expertise, talent banks, and networks within organizations and government should be identified and publicized as a resource for employment, recruitment, advisory committee membership, program planning groups, public task force memberships, and consultancies.

With regard to the interaction between a woman and her various health care providers, the content of that interaction is an important element of that woman's health care. Good communication is a key component of that interaction and PHS should work with health professional organizations to, (a) reduce the negative myths and stereotypes of women patients among health care providers, (b) increase the level of sensitivity of health care providers to women's health needs and to encourage clear communication as an essential part of health maintenance, (c), encourage women to ask questions of the health professional concerning her health needs, (d) assure that the health needs of minority women are met through increased cultural sensitivity and awareness and use of native languages in the health care setting.

There are numerous research and program needs for specific health issues of women. PHS should continue to collect and maintain an inventory of programs and research specifically related to women's health issues. Such an inventory is critical to ensure that women's health issues are considered in the research planning process and that current research needs in these areas are met.

Data collection. The Department of Health and Human Services (DHHS) funds numerous data systems which can be used to develop baseline data on the effectors of health in older women (e.g., socioeconomic factors, nutritional factors, drug/alcohol misuse, etc.) and successful aging in this population. Data gathered from each of the states and territories is also critical for the establishment of this baseline information. Presently available data should be used to develop baseline information on th factors which affect the health of older women. Steps should also be taken to, (a) assure coordination among DHHS agencies, (b) determine the extent of present data on older women's health effectors, (c) define gaps in data, and (c) determine the types of longitudinal studies which should be supported to provide this information. Consideration should be given to developing a national collaborative data system to provide standardized baseline information on the health effectors of older women with the participation of all states and territories. It is increasingly important for the PHS to continue to develop guidelines for the clinical testing of new drugs in older women. Where appropriate, the cohort of older women should be included in clinical trials for new drugs and compared with cohorts of either older men or younger women in those trials.

With regard to research, several topics are primed for new, continued, or further investigation:

- gender differences in longevity, especially those factors which contribute to the longevity differences among racial and ethnic groups.
- the cause, treatment, course, and prevention of disorders prevalent in older women.
- nutrition for older women including the establishment of nutritional standards and requirements, minimum daily requirements for vitamins and minerals, the relation of food-drug interactions to good health.
- the metabolism and disposition (pharmacokinetics) of drugs and alcohol with respect to age and gender.
- the cost-effectiveness of different types of care settings (including the home) for older women, measured in terms of: 1) client-service requirements; 2) quality of life (social and health); and 3) source of funding (public or private).
- development and refinement of diagnostic assessment tools to be used for a comprehensive physical and mental health evaluation of older women (including nutritional status, functional status, psycho-social status, drug and alcohol use).
- various psycho-social factors which affect the health of older women: 1) changing family structure and kinship patterns; 2) the consequences of retirement early or late in life; 3) widowhood and bereavement; 4) cultural and ethnic factors.
- Alzheimer's disease and other dementias.
- To better understand the cause, treatment, course and prevention of chronic conditions common among older women such as arthritis, osteoporosis, incontinence, diabetes, cancer, depression, and paraphrenia (late onset schizophrenia). These are the most disabling disorders which present the largest financial drain on the older woman and can affect quality of life and family relationships to the greatest extent.

- on the safety and efficacy of estrogen therapy and other treatment modalities for the management of menopausal and post-menopausal symptoms.

- on exercise and its effects on the medical and physical health and functioning of the older woman; including the development of appropriate exercise programs for this population.

- on the incidence of alcoholism and the patterns of drinking in older women, and on the incidence of suicide in older women and the factors that contribute to suicide in older women.

Health professionals. An educational strategy for teachers, researchers and clinicians who are required to provide health care for the increasing member of older women in the population needs to be formulated and implemented promptly. Examination of curricula in health professions schools identifies that little attention is given to the older years of adult life. The following conclusions can be drawn:

- There is a need to integrate geriatric and gerontological issues, particularly those of older women, into every health profession school's curriculum.

- Provide intensive short term continuing education courses to update the knowledge and skills of current faculty, particularly in the area of geriatric assessment.

- Stress the need for interdisciplinary collaboration in dealing with gerontological issues by providing resources for that purpose.

- Intensify recruitment efforts among minority groups since the number of minority elderly women is likely to increase dramatically during the next decade and since minority groups are underrepresented in all health professions.

- Support programs of clinical training in mental health and aging, and develop training sites for clinical experience with elderly women, particularly in the community, as well as in hospitals and nursing homes.

Paraprofessionals--(unlicensed direct care providers). There is a need to continue to develop and provide technical assistance to devise continuing inservice education programs for direct care providers of the elderly, especially those in the following settings: adult day care centers, long-term care facilities, at home, mental health clinics, alcohol rehabilitation clinics, and community health centers.

Public information and education. There is a need to continue the development and provision of coordinated PHS efforts which will stimulate and motivate women of all ages to be responsible for their own health, especially to:

- Be able to distinguish the physical and mental changes accompanying the normal aging process from those that would be considered abnormal. This would include dispelling certain popular myths about aging.
- Seek help from an appropriate health professional in a timely fashion, including preventive care.
- Learn to communicate effectively with health professionals (asking the right questions, understanding health information).
- Realize the importance of maintaining a healthy life style in disease prevention.

In addition, successful service programs should be evaluated and efforts must be made to coordinate with private, state, and local governments to translate these ideas into effective public education programs (e.g., projects resulting from the National Channeling demonstration program funded by HCFA, such as Gateway I and Gateway II which provides a referral service for Maryland residents on all services available for the elderly; FDA and Better Business Bureau anti-quackery program and the "Get the Answers" campaign on prescription drugs; NIDA "Passport to Good Health" booklet for the elderly to record all drug use).

PHS should work with associations for the elderly to develop public service announcements which dispel the myths about aging and older women, provide information on the effects of retirement on physical/mental health, emphasize prevention objectives and encourage women (and the families of those women) with alcohol, drug or mental health disorders to seek professional help.

A comprehensive community public education package which provides information and direction to local health organizations for health promotion efforts would serve as a useful resource for elderly women and many community organizations and health practitioners.

Provision of health services (such as home health care, community-based physical and mental health care) for older people, especially women, should be encouraged by cooperative efforts of the Federal, state, local and private sectors. An effort should be made to coordinate public (e.g., PHS, AoA, HCFA) and state interests in establishing programs of respite and adult day care to relieve the chronic social isolation of, and exhaustion and depression in two groups of women caregivers: a) younger and middle-aged women caring for an older, chronically ill dependant in the home; and b) older women caring for a chronically ill dependant of any age in the home.

Private and public associations should: (a) continue efforts to involve older women in their volunteer activities and; (b) should continue to provide services for older women.

Finally, there is a need for some coordination between government agencies and the private sector to strengthen and improve health care for older women employees through existing mechanisims such as the Employee Assistance Programs (EAPs) for older women employees or spouses, and in the area of pre-retirement counseling for older women.

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Commissioned Paper

Osteoporosis

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Osteoporosis

Introduction

Osteoporosis is the leading underlying cause of bone fractures in women after the menopause and in older persons in general (1). Osteoporosis means increasing porosity or thinning of the bones of the body. It is a condition in which bone mass decreases. As the bones become thinner, they become more fragile, and thus more susceptible to fracture. A fall or a blow that would not injure the average person can easily cause one or more bones to break in a person who has advanced osteoporosis.

Osteoporosis is a serious public health problem. It affects as many as 20 million persons in the United States. Each year in this country 1,300,000 bone fractures are caused by osteoporosis in people 45 years of age and older. Of all fractures in the elderly, 70 percent are attributable to osteoporosis as the underlying cause. Of those who live to be 90 years old, one-third of the women and one-sixth of the men will have had a hip fracture (2). The economic cost to the Nation from osteoporosis is large, having been estimated to be $3.8 billion dollars each year (3).

Bone consists of an organic matrix containing strong collagen fibers impregnated with minerals, mostly calcium and phosphate. Bone is by no means a static organ of the body; rather, it undergoes continuous turnover during life. Certain cells, called osteoclasts, resorb bone producing tiny bone cavities; whereas other cells, called osteoblasts, cause new bone to be formed, thus filling these cavities. These two forces are closely linked to one another.

The greatest amount of bone mass, called "adult peak bone mass," is reached at approximately 35 years of age. This bone mass is 30 percent higher in men than in women. Moreover, bone mass is 10 percent higher in Blacks than in Whites. Within each of these groups there are individual differences of 15 percent. Nevertheless, in general, in terms of bone reserve, White women are at greater risk for osteoporosis.

After reaching its peak in young adult life, bone mass then declines throughout the remainder of life due to imbalances in bone turnover. In a cumulative sense, over these later years, women loose three times more bone mass than do men. This is due to a very rapid rate of bone loss that occurs for the three to seven years after the menopause. Bone loses both its mineral content and it organic matrix during this process.

The clinical expressions of osteoporosis are bone fractures and their complications. The major sites of bone fractures are the spine (vertebrae), the hip (really the near end of the thigh bone--the femur), and the wrist (really the far end of the radius, one of two bones in the forearm). The spinal vertebral fractures occur much more often in women and usually begin in late middle life. They may cause acute back pain or none at all, the fracture being discovered in the latter instance during radiographic (x-ray) examination. Very often the vertebral compression fractures develop gradually. They cause women to lose height, become smaller, and in many to develop curvature of the spine (kyphosis), producing the "dowager's hump."

Hip fractures are even more serious. They occur largely in elderly people, in men almost as frequently as in women. According to the National Center for Health Statistics, in the mid-1970s, there were approximately 150,000 hospital discharges for hip fractures in the United States each year. In spite of advances in medical treatment, most patients do not regain full mobility and normal activity, and almost 20 percent die within one year from complications (4).

The other major type of fracture--the fracture of the radius near the wrist--also tends to affect younger persons among the elderly and to occur much more frequently. It interferes with the use of the arm for four to eight weeks; residual chronic disability is uncommon.

When the physician discovers that a person has a low bone mass by a routine X-ray examination by finding a bone fracture after minor injury, he will want to evaluate the situation further to exclude other causes of metabolic bone disease. These are referred to as causes of secondary osteoporosis and includes overactivity of the parathyroid gland or the thyroid gland; prolonged use of cortisone-like drugs; cancerous invasion of bone by multiple myeloma or metastases from other sites; and osteomalacia, softening of bone from impaired mineralization. Each of these conditions would warrant its own special plan of management. Most patients, however, turn out to have primary osteoarthritis.

Several methods, many of them new, are now available to measure bone density. Standard X-ray examination of the spine or extremities are the most widely used. Such X-ray examinations are, however, insensitive indicators; studies have shown that bone density must be reduced by 20 to 30 percent before the disease can be detected on X-ray. In spite of this, a survey using spine x-ray examinations in women shows a relentless increase in osteoporosis with advancing age, with an osteoporosis rate of 89 percent in women 73 years of age or older. The several methods for measuring bone density (photodensitometry, photon absorptiometry, neutron activation, computed tomography, etc.) vary in their cost, availability, tolerability, and discriminating capabilities.

With respect to the question of risk factors, women are at greater risk for developing osteoporosis (than are men) because as discussed above, they develop less bone mass in early life, and the rate of bone mass loss is accelerated for several years after the menopause. Early menopause, naturally or surgically induced, is a special risk factor. Whites are at greater risk than Blacks; this is true for both women and men. People who are underweight are at greater risk for osteoporosis than those who are overweight. Immobilization, locally or generally, fosters loss of bone. Interestingly, weightlessness (as in space) causes excessive bone loss. Of special importance to women, especially young women, are recent reports that excessive exercise can cause osteoporosis by inducing amenorrhea. Calcium deficiency leading to impaired mineralization is another important risk factor. The relationships of other dietary factors, such as magnesium, vitamins A and C, protein intake, and alcohol ingestion to osteoporosis are uncertain. Cigarette smoking seems to be a significant risk factor.

Considering the many complex factors that regulate normal bone turnover (metabolism), such as hormones, vitamins, and specific growth factor, there are likely to be several causes of osteoporosis. Nevertheless, there seems to be two leading probable causes: deficiency of estrogen and deficiency of calcium.

Emphasis must be directed towards preventing osteoporosis before structural and functional defects develop. The hallmarks of osteoporosis prevention are estrogen replacement and calcium supplementation. Exercise and vitamin D may also be important.

An expert panel convened for a National Institute of Health Consensus Development Conference on Osteoporosis on April 2-4, 1984, concluded that "estrogen replacement therapy is highly effective for preventing osteoporosis in women" (5). It has been shown to reduce the frequency of fractures of hips, wrists, and the spine. Protection can be achieved with low doses of estrogen. Estrogens are effective in preventing further bone loss even if started 6-years after menopause. The panel advised estrogens for women with ovaries removed before 50 years of age, and stated that estrogens should be seriously considered by women and their physicians for White women with a normal menopause. The duration of estrogen replacement should not be limited. Decisions should be made on a case-by-case basis. The panel discussed the risks and benefits of estrogen therapy (with and without progestrogen) with respect to endometrial cancer, breast cancer, and cardiovascular factors, as well as to osteoporosis.

The daily intake of elemental calcium in the United States is 450-550 mg. This is well below the recommended dietary allowance (RDA of national Reserve Council) of 800 mg daily. The panel found that the daily requirement for premenopausal women is 1000 mg of calcium; and to be 1500 mg for postmenopausal women without estrogen replacement.

Therefore, the recommended intake for all adults should be increased to 1000-1500 mg daily. Major sources of calcium are dairy products; an 8-ounce glass of milk contains almost 300 mg elemental calcium. For those unable to meet the daily calcium requirement by diet, supplementation with calcium tablets is recommended.

Normal levels of vitamin D are needed for calcium absorption. People not receiving adequate sunlight, such as those confined to home or a nursing home, should receive vitamin D supplements, but no more than 600 to 800 units, twice the daily recommended intake.

Since inactivity and weightlessness both lead to accelerated bone loss, weightbearing exercises such as walking or running are recommended. Swimming would appear to be ineffective.

Research is currently proceeding along several different avenues to develop other agents or forms of treatment for osteoporosis. Agents under investigation include fluorides, calcitonin, calciterol, anabolic steroids, and biphosphonates. However, their efficacy and safety have not been determined.

Chapter Four

Alcohol, Drug Use and Abuse, and the Mental Health of Women

Introduction

There are many questions about the impact of alcohol abuse, drug abuse, and mental illness on women that have not been adequately dealt with, particularly by scientific investigators. Nevertheless, research data provide a point of departure and a perspective for examining the ways in which these problems affect women and men differently. The following review highlights some of what is known and, perhaps more importantly, what is not known about those differences. Problems such as alcohol abuse, alcoholism, other drug abuse, and emotional and mental illness or both are not mutually exclusive. However, the manner in which data have been collected and services provided often make it convenient to examine each problem separately. In reality, multiple drug abuse--usually including alcohol--is more often the rule than the exception, and the use of alcohol and other drugs in attempting to alleviate underlying emotional problems is common.

Because there are so many commonalities in these three nominally discrete areas, a succinct review of each of the individual areas will be followed by a discussion of shared issues. The shared issues include: common causal factors and correlates, the relationship to women's roles in society, interrelationships between substance abuse and mental health, gender-related attitudes and practices of those who provide treatment services, and the special needs of women with respect to treatment and prevention.

Evaluating the role that gender plays in substance abuse and mental illness is difficult because of limited amount of information available on the subject.

Research has often ignored gender differences. Frequently, the information available raises more questions than it answers. While there has been much thoughtful speculation and some careful research, the relative contributions of biology, acculturation and role expectations are usually not known. This report will highlight what has been done and will deal briefly with some of the barriers to treatment for women.

It will not attempt to survey the literature dealing with the differential response to treatment of men and women. This is an especially complex area. To deal with it adequately would justify a detailed separate report outlining the many problems involved. Assessment of the outcome of treatment is difficult for many reasons. To the extent that gender differences have been taken into account, the research findings have often been equivocal. Psychopharmacological research focusing on sex-specific response has begun to find evidence that women and men do differ in their responses to such drugs as antidepressants. But this research is only now receiving appropriate emphasis. Most earlier research focused on studies in men or simply ignored possible differences between the sexes.

Defining just what is done in other kinds of treatment and how it differs when applied to women or men is often difficult. Much more than the gender of the therapist and the client or both is likely to be involved. For example, the sensitivity of the therapist to gender differences may be more important than the gender of the therapist. Experienced therapists may be more sensitive than the inexperienced--regardless of gender. The context in which treatment is received may be as important as the treatment itself. Even the response to a pharmacological agent may be affected by the context in which the treatnent is given--as well as by biological differences between men and women. Ancillary services such as vocational training, child care, or other types of assistance may be as important in determining therapeutic outcome as counseling directed toward the specific problem for which help is sought.

Nevertheless, new knowledge about women's issues and the psychology of women is important in modifying the therapist's approach to patients who are female. This knowledge has rapidly increased, but is not yet systematically included in curricula for training health professionals. The vast majority of persons now seeking such information through attendance at professional meetings, continuing education, and outside reading are women. But the majority of therapists are men. The need to incorporate new insights concerning women and gender differences into professional training is increasingly recognized. Nevertheless, there has been comparatively little emphasis on this new knowledge in continuing education for professionals which is aimed at male as well as female therapists. If treatment is to be responsive to the needs of women, awareness of gender differences and of the changing expectations of women must receive appropriate emphasis at all levels of training and program development.

As this review underscores, there are few areas in which conclusions can be stated categorically and fewer still in which our knowledge of substance abuse and mental health problems in women is more than fragmentary. Research on the psychosocial and biological causes of mental illness, alcohol and drug abuse and on how they affect on women's lives has only just begun. But is is becoming increasingly evident that gender differences in physiology and development, and the cultural forces with which each sex contends must all be taken into account if effective prevention and treatment are to occur.

Alcohol Abuse and Alcoholism

Because even moderate alcohol use by women was stigmatized throughout much of American history, alcohol abuse and alcoholism have been traditionally thought of as men's problems. As drinking among women became more socially acceptable, women's alcohol problems also inevitably increased. Despite this change, the predominance of male problem drinkers and alcoholics and the continuing stigma attached to alcohol abuse in women have marketly affected our understanding of female alcoholism. Our treatment approach and the willingness of women to seek treatment have also been affected. A reticence on the part of researchers, clinicians and women victims of alcohol abuse to acknowledge the problem adequately makes it difficult to estimate accurately just how many women have alcohol problems or the levels of use at which such problems may be expected.

Survey data on levels of use and of use-related problems among women are almost certainly distorted, to an unknown extent, by the gender-based double standard of drinking that continues to prevail in American society. Despite these distorting factors, it is becoming increasingly evident that there are important differences between the sexes that must be taken into account if alcohol abuse in women is to be more effectively prevented and treated.

Few research studies on alcohol abuse and alcoholism have included women. Even when women have been studied, the number has often been too small for statistically valid generalizations or comparisons. For example, despite good evidence that genetic factors affect alcoholism in males, the small numbers of females studied allow less certainty as to whether similar genetic determinants also make some women more vulnerable to alcohol effects and to becoming alcohol-dependent. Only one study thus far has included enough women to conclude that a four-fold increase in the likelihood of alcohol abuse occurred in women who were adopted and whose biological mothers were alcohol abusers as compared to those whose mothers were not (1).

National surveys of alcohol consumption and research on alcohol's effects have rarely taken into account sex differences in body weight and body water content which are known to play an important role in the higher level of intoxication experienced by women when they drink the same amounts as do men (2). In the absence of "hard" evidence, the assumption often has been made that women have the same problems with alcohol as do men or conclusions are based on very limited clinical observations.

Heightened awareness of women's issues during the past decade has led to an exponential growth in interest in their alcohol problems. The willingness of prominent women to "go public" in discussing their own alcohol problems has also increased the ability of others to acknowledge their difficulties. These trends have led to a new wareness of the need for research focusing on the ways in which alcohol use--and abuse--affect women differently than men and of women's differing treatment needs.

Patterns and trends in alcohol use in women. National surveys consistently indicate that at all ages fewer women drink alcohol than do men and that those who do drink consume less. A majority of men drink at all ages. After age fifty, a majority of women do not. Male "heavier" (14 or more drinks per week) drinkers out number female "heavier" drinkers by nearly five to one (19 percent versus 4 percent) in the 21 to 34 year old group. Nevertheless, the percentage of females who drink heavily is by no means negligible (from 2 percent to 8 percent depending on the age group) and is four times as large in the 35 to 49 year old group as it is among women over 65 (8 percent versus 2 percent). Although the percentage of women who drink continues to be lower than of men, this difference has diminished since World War II. Among high school seniors, the percentages of males and females who consumed alcohol at some time in the year preceding any recent annual servey has been nearly identical almost nine out of ten. Daily use is, however, less than half as common among females (3).

While heavy drinking among those over 65 is presently uncommon (2 percent of women and 8 percent of men), the percentage of the elderly, including women, with alcohol problems is likely to increase. Those presently in the over 65 age group grew up in a much less permissive era than those who will be old in the year 2,000. Two categories of older problem drinkers have been identified: 1) early onset drinkers who have survived--about two thirds of elderly alcoholics, and 2) late onset heavy drinkers thought to begin drinking in response to such stresses of old age as retirement, loss of spouse or other loved ones, social isolation, and physical decline.

Heightened effects of alcohol in women. Although there is little question that women consume less alcohol on the average than men, there is increasing evidence that when they drink at comparable levels they are likely to be more imparied both acutely and chronically.

Acute Effects. The greater intoxicating effect of alcohol in women compared to men can be explained by differences in total body water content between the sexes. Shortly after alcohol is consumed, it becomes uniformly diffused in both extra-and intracellular body water. When this has occurred, tissue alcohol concentration is directly proportional to tissue water content (4). Those with lower total body water quantities (i.e. a smaller body water compartment) will have a greater tissue alcohol concentration. Smaller and fatter people have smaller body water compartments than larger or leaner, more muscular ones. Because of their higher percentage of fatty tissue, women have smaller body water quantities than men of comparable size. This results in higher blood alcohol concentrations in women. Moreover, there is evidence that women develop higher blood alcohol levels for given amounts of alcohol when it is ingested at the time of ovulation or just before menstruating (2).

In one recent study when experimental data were adjusted to take into account sex differences in body water content, significant differences in the amounts and time required to metabolize alcohol were no longer found (5). Similarly, when blood alcohol concentrations in both men and women were held constant (at 0.10 percent) in an experimental setting, alcohol's effects on body sway, hand steadiness and response latency were about the same in both sexes (6).

Chronic effects. Evidence that chronic alcohol abuse exacts a higher price from women than men at comparable levels of heavy use is increasingly compelling. Alcoholic women are more frequently disabled and for longer periods than are male alcoholics. Moreover, the percentage of women alcoholics who die from such causes as suicides, alcohol related-accidents, circulatory disorders, and liver cirrhosis higher than for men. Several international studies show consistently that women alcoholics have death rates from 50 to 100 percent higher than those of male alcoholics (7). A longitudinal study of 103 American women alcholics followed for seven years after their treatment in 1967-68, found that nearly a third (31 percent) had died, a rate four and one-half times higher than expected. The average life span of these women was decreased by 15 years. Women who were older when they sought treatment, who became alcoholic before age 30, or who had had histories of frequent binge drinking were most likely to have died prematurely. Those who became abstinent were most likely to have survived (8).

There is also evidence that women alcholics in treatment often how greater impairment earlier in their drinking careers and despite having consumed less alcohol than comparable men. Evidence of this includes the following: advanced liver disease was found to be more frequent among English women alcoholics than among men with similar drinking histories (86 percent of females versus 65 percent of males) (9). German and Japanese researchers have also found more alcohol-related liver damage in women at lower levels of consumption or after shorter histories of heavy drinking (10, 11). In a Canadian study of those admitted to an in-patient alcoholism treatment program, alcohol-related illness was equally frequent in both sexes despite shorter periods of use by the women (12). Generally similar findings have also been reported by Austrailian (13) and French (14) investigators. While an adequate explanation of such findings is still lacking, two theories have been offered: One attributes the greater liver damage to the effect of estrogens, which in combination with alcohol, increase liver damage (15). A second explanation stresses the possibility of a gender-related immune response in women which also makes the liver more vulnerable to injury (16).

Reproductive system and sexual dysfunction. Women alcoholics are clinically reported to have higher rates of gynecological and obstetric problems than other women. Problems that have been associated with heavy drinking include amenorrhea, infertility, frequent gynecological surgery, early menopause, spontaneous abortions, and complications of labor and delivery.

A related problem reported by women alcoholics is sexual dysfunction. Kinsey's study of alcoholic women found that seven out of ten (72 percent) had problems with "frigidity", an older term for sexual dysfunction (17). In a more recent study of 30 alcoholic women, three quarters of them reported they experienced decreased sexual satisfaction after drinking became a problem. Of these, two-thirds reported greater difficulty in achieving orgasm. Nearly half (47 percent) had become anorgasmic (18).

Although gynecological, obstetric, and sexual problems appear to be more common in women who drink heavily, the basis is unclear. Biological or psychosocial causes, more probably both, may be involved.

A recent study of the effects of the acute ingestion of a moderate amount of alcohol in young adult women (ages 20 to 32) at the same point in each of their menstrual cycles found that plasma concentrations of estradiol, estrone, progestrone, and testosterone were little changed (19). A study using female macaque monkeys has also been done. After three to six and a half months of heavy alcohol use, the monkeys developed amonorrhea, uterine atrophy, decreased ovarian size, and depressed luteinizing hormone levels despite adequate diets.

As humans, single high doses of alcohol did not supppress pituitary and gonodal function in female macaque monkeys. The authors conclude: "Chronic alcohol intoxication produces similar disruptions of reproductive function in alcoholic women and macaque monkeys" and go on to say "It is likely that alcohol induced disruptions of menstrual cycle regularity in higher primates (including humans) are a consequence of its toxic effects on both the ovary and the hypothalamic pituitary axis" (20).

In human females, toxic effects may occur at ovarian, hormonal, and central nervous system levels. Imparied sexual functioning may also reflect underlying depression or poor interpersonal relations. Since drinking is one means of coping with indaequate sexual response or the anxiety surrounding it, sexual problems may be both an antecedent and an effect of heavy drinking.

Fetal alcohol syndrome and fetal alcohol effects. Adverse effects of alcohol ingestion by pregnant women on their offspring were first clinically suspected over 200 years ago, but it is only in the last decade that those effects have been more precisely specified and their physiological basis better understood. The term "fetal alcohol syndrome" (FAS) is now applied to neonates having three characteristics which have been associated with maternal alcohol use:

- Growth retardation before or after birth.
- Abnormal features of the face and head such as unusually small head circumference and flattening of the facial features or both.

- Evidence of central nervous system abnormality such as mental retardation or abnormal behavior.

Other effects that have been identified as associated with maternal drinking during pregnancy are termed fetal alcohol effects (FAE). FAE include a range of congenital abnormalities such as eye and ear defects, heart murmurs associated with defective development of the heart chammer wall, genitourinary defects, hemangiomas, and fingerprint, and palmar crease abnormalities.

Evidence based on animal and human research leaves little doubt that serious birth anomalies can result from alcohol ingestion, but the frequency with which they occur and the level of alcohol use that can cause them in humans is by no means certain.

Estimates of the prevalence of the full blown fetal alcohol syndrom are from 1 to 3 per 1,000 live births. The frequency of FAS among the newborn of women who have been identified as heavy drinkers is, of course, much higher. Estimates have ranged from 23 to 29 per 1,000 live birth. Alcohol-related effects of lesser severity in the infants of heavily drinking women may occur as often as in 69 percent of live births. Little reported a 91 gram decrease in birthweight associated with about two drinks (1. oz. of pure alcohol) per day consumed before recognizing that one was pregnant. A 160 gram deficit was found in infants of women who drank that much during the seventh to ninth months of pregnancy (21). A more recent study found that drinking an average of two or more drinks a day tripled the likelihood of preterm delivery (22).

Unfortunately, there are many problems with such dose-effect estimates. Alcohol dependent women may be inclined to understate the amount of their drinking. This may be especially true if they feel guilty about drinking while pregnant. Apart from alcohol use, other factors--lifestyle, smoking, other drug use, poor diet, or poor general health--also cause problems during pregnancy and may affect neonatal health. The possibility that paternal drinking--known to reduce sperm counts and sperm motility, and to produce other sperm abnormalities--may also contribute to fetal abnormalities cannot be dismissed although the limited studies that have been done have not found such an effect (23, 24). Experimental administration of non-alcohol doses to pregnant women while carefully controlling for other possible factors is not, of course, ethically possible.

As with other teratogens, the question of just how much is needed to affect the fetus at different points in development is also unclear. Taken at a point of maximum fetal toxicity, alcohol may kill the fetus, resulting in a spontaneous abortion that may go undetected (or unreported) in the individual case. At other points, either because the individual fetus is genetically more resistant to damage or the stage of development makes damage less likely, there may be no detectable alcohol-related anomalies.

Animal studies provide some indications of possible human effects. One such study designed to resemble human "binge drinking" used the animal equivalent of two large doses of alcohol given on a single day during gestation. The resulting damage to the mouse fetuses closely resembled that found in cases of human FAS (25). Other animal studies of alcohol's effects have duplicated such behavioral abnormalities in human offspring as hyperactivity and learning problems presumptively caused by alcohol use during pregnancy (26, 27, 28).

Other problems of alcohol abuse for women. Women who abuse alcohol suffer disproportionately from both biological and social disabilities. But there are other ways in which women are the victims of alcohol abuse even when they are not themselves abusers. Although it is often difficult to specify the exact role alcohol plays, there is general agreement that its abuse is often associated with family violence, especially the battering of wives. According to one review, alcohol abuse or alcoholism was involved in about half the cases of wife beating cited in the literature (29). Although women may sometimes prefer to attribute physical abuse to alcohol rather than acknowledge other sources of marital discord, there is little question that alcohol is often used to "justify" violence and to deny responsibility for it, or that drinking can be a source of marital contention leading to violent behavior.

There is also evidence that alcoholics and their spouses are seven times more likely to be separated and divorced than couples in the general population (30) and that women alcoholics are more often divorced than are alcoholic en (31). Moreover, when women alcoholics are divorced, their greater economic dependency, greater responsibility for children, and typically lower earning capacities are all likely to make post marital adjustment and rehabilitation or both more difficult than that of men.

Alcohol abuse has been implicated as a factor in rape both for the victim and he rapist. In one study a third of the 77 rapists examined had a history of alcoholism (32). Another study found that half of a group of men who had raped older women reported having been high on alcohol or on alcohol and drugs at the time of the crime (33). Since alcohol may be used by the rapist as a mitigating factor to "excuse" his violent behavior, its exact causal role is uncertain. Recent reports indicate that as many as 29 to 54 percent of women alcoholics in treatment have been rape victims at some point in their lives (34, 35).

Women alcoholics report high rates of other types of sexual abuse as well. Half (53 percent) of the women entering one midwestern alcoholism treatment program during a two-year period reported having experienced incest or other sexual abuse before age 21, many by age 5 or 6 (36).

Such figures are probably underestimates since many of the women in the studies cited were reticent about revealing that they had been sexually abused and did so only late in treatment and only to women therapists.

Drug Abuse (Other than Alcohol)

During the past two decades, there has been a substantial increase in the availability, acceptability, and number of potentially abusable drugs. Our burgeoning knowledge of neurophysiology combined with the skill of the organic chemist have resulted in the creation of an array of anxiety-reducing and sedative drugs. As is so often true of new psychoactive therapeutic compounds, an initial optimism regarding their abuse potential has sometimes proven to be unwarranted. Use of these drugs is now common, their abuse not uncommon and, as we will discuss, this affects many more women than men.

Illicit drugs such as marijuana and cocaine once used only by a very small minority are now widely consumed. While male use predominates, female use, especially by the very young, is common and may be approaching parity with that of males in some groups. Our expanded knowledge of the chemistry of psychoactive subtances has also resulted in an alphabet soup of illicit psychoactive compounds. Most of these are not commonly used by men and still more rarely used by women. The brevity of our experience with widespread illicit drug use and the difficulties of studying it have limited our knowledge. This is especially true in regard to chronic use. As with alcohol, most research has been done with males, partly because ethical considerations restrict studies in women that employ drugs with unknown effects on reproduction and partly because heavy use among males is more common. However, the large number of women who now use illicit drugs and their possible vulnerability to reproductive effects, make such use a serious public health concern.

Patterns and trends of drug abuse among women. U.S. national surveys have consistently found that females use virtually all of the illicit drugs less frequently than males. Among young adults ages 18-25, the group which uses these drugs most, slightly more than half as many women as men (19 percent versus 36 percent) were using marijuana. In the month preceding the 1982 national household survey (31). Among those over 26, less than a third as many women were current marijuana users. The total number of women now using marijuana is estimated to be about 7 million. While there are many other illicit (and licit) drugs that are, or can be abused, their use by either exist at much lower levels. Again, in the group most likely to use drugs, 18-25 year olds, only a little more than half as many females as males (5 percent versus 9 percent) reported any use of cocaine in the month preceding the 1982 survey. Nonmedical--that is use of drugs without medical supervision--use of sedatives in the year prior to the survey was reported by 6 percent of young adult women compared to 11 percent of men. Nine percent of young women also reported non-medical use of stimulants over the same interval. Stimulant use by males of the same age in the same period was 13 percent.

High school seniors, a group in transition from adolescence to adulthood, have been surveyed annually since 1975. There has been a decided reduction in marijuana and most other drugs used over the past several years. Daily use of marijuana for example, was half as common in members of the 1983 senior class as it was in 1978 (5.5 percent versus 10.7 percent). Slightly more than a fifth of the females (22.2 percent) reported any marijuana use in the month prior to the survey of the 1983 senior class as compared to about a third (31 percent) of the males. Current (within a month before the survey) nonprescribed stimulant use by seniors involved one in eleven females, slightly more than males (9.1 percent versus 8.2 percent). Current use of sedatives and tranqualizers was reported by about three percent of both sexes (3).

There are two significant exceptions to the generally lower level of drug use by women: their use of cigarettes and of medically prescribed psychoactive drugs.

For high school seniors, current cigarette smoking by women now exceeds that of men (31.6 percent versus 28 percent) and the same for young adults 18 to 25 (42 percent versus 37 percent). Because of this increase in smoking in young women the total number of female smokers of all ages is now only about ten percent smaller than that of male smokers (28.4 versus 31.8 million).

The second exception to the generalization that psychoactive drug use by males exceeds that of females is in regard to the use of medically prescribed psychotherapeutic drugs. In 1979, the latest year for which detailed survey data on psychotherapeutic drugs are available, nearly twice as many women as men (over 18) had used psychotherapeutic drugs in the preceding year (20.2 percent versus 11.0 percent for men). Anti-anxiety agents--the minor tranquilizers--were also used nearly twice as often by women (14.1 percent versus 7.5 percent). Sedatives were used by over three times as many women as men (2.6 percent versus 0.8 percent). Over twice as many women used antidepressants in the preceding year (2.8 percent versus 1.3 percent) and 20 percent more used hypnotics (sleep inducing drugs). Antipsychotic medication--the major tranqualizers used to treat such disorders as schizophrenia--were used by fifty percent more women (1.5 percent versus 1.0 percent) (38).

The 1982 National Survey on Drug Abuse also included some questions on medical use of these psychotherapeutic drugs (37). Although these data were less detailed and analyzed differently from the 1979 study just described, the findings are generally similar. Current use of any of the prescribed psychotherapeutic drugs was 60 percent more common in women over 18 than in men. Although the data were not analyzed both for sex and educational level simultaneously, adults 26 or over who were not high school graduates were much more likely to be current users than those who did graduate (e.g. 18 percent of non high school graduates were taking such drugs compared to 10 percent of college graduates).

Women also represent the majority (61 percent) of those who have used anxiolytic (anxiety-reducing) drugs for one year or more. Nearly 2 million women reported having used such drugs for a year or more of their lives. Most of these women--7 out of 10--were over age 50 (38). It is not a simple matter to say how often this greater use of prescribed psychotherapeutic drugs by women is abusive, inappropriate, or medically justified, answershinge on additional questions such as: Are the rates of emotional illness inately greater in women than in men? Are the much higher rates of depression and other disorders in women partly an artifact of sexual stereotyping or the result of women's disadvantaged position, or are they due to a greater biological vulnerability? The more frequent contact of women with physicians may also play a role in their greater use of prescribed psychoactive drugs. Those issues will be discussed in the section on women's mental health.

There is, however, little question that self administered overdoses of psychotherapeutic drugs are a health hazard for women. Data from the government's Drug Abuse Warning Network (DAWN) on hospital emergency room admissions during 1982 indicate that over 70 percent more women than men were seen for tranquilizer related adverse consequences. Over twice as many women were seen for adverse consequences of antidepressant use; a third more for adverse consequences of non-barbiturate sedatives. Over half (51.7 percent) of drug-related emergency room admissions of women are identified as suicide attempts. By contrast, the motives of men for using the drugs which led to their admission were likely to be due to dependancy or for mood altering effects (39).

Seven out of 10 of the women who died drug-related deaths were over age 30 according to medical examiner reports. More than twice as many drug-related deaths in women were determined to be suicidal in origin (53 percent versus 25 percent for males). Over 1,100 women were reported by the DAWN system in 1983 to have died of drug related causes, most because of their suicidal use of therapeutic drugs including analgesics (39).

Opiate addiction among women is uncommon, but is important because the health risks for these women and for their offspring are quite disproportionate to the numbers involved. Problems specific to this group will be discussed in the section below on opiate dependent women.

Specific populations of drug-abusing women. Although the several populations described overlap, they are sufficiently discrete to permit some generalizations that are helpful in thinking about problems that are experienced by drug abusing women.

The opiate dependent woman. Opiate addiction was once much more prevalent among women than men. Prior to World War I when many patent medicines and cures for women's complaints" often contained opiates, habitual use resulted in opiate dependent females outnumbering males by at least two to one (40). Currently only one-fifth to one-fourth of the addict population is believed to be women (41, 42). Although opiate dependent women are probably the smallest segment of the drug abusing female population, they have been the most studied. A review of recent research on women's drug use found that 70 percent of the studies cited focused on heroin and other opiate use or on methadone maintenance treatment for opiate dependent women (43). This emphasis reflects the traditional concern with those types of illicit drug use that are perceived as most threatening to the larger society. It also reflects the serious medical and social problems experienced by such addicted women and their offspring.

Prevalence and patterns of narcotic use. While the exact number of opiate dependent women is at best an educated guess, as of 1981, 32,000 opiate dependent women were admitted to treatment in federally monitored facilities. They represented nearly half (45 percent) of all women clients admitted for treatment to such programs (44). More speculative estimates of the total number of addicted women in any given year have been between 126,000 and 200,000 (45, 46) and there is good reason to believe that must opiate abuse in females remains hidden (47).

Race and ethnicity are related to opiate dependency as reflected in admissions treatment to figures. At least two times as many Black and Hispanic women were admitted for treatment of opiate dependency in 1981 as White women (62.4 percent, 61 percent, and 22.5 percent of Black, Hispanic and White female admissions respectively).

Women who are opiate dependent have been distinguished from men who are dependent on narcotics along two major dimensions:

1. They are more likely to regard themselves--and to be regarded--as more socially deviant than their male counterparts (47). They are more deeply entrapped, at earlier ages, by social and economic conditions offering few ways out of the addiction pattern and thereby promoting destructive dependencies (48).
2. The health of women addicts is poorer than that of men because of neglect, poor nutrition and lack of independent financial resources to pay for needed general medical, dental, gynecological and obstetrical care.

For women with children, these circumstances increase the likelihood of their losing custody, or of avoiding treatment because of fear of possible loss of custody, should their situation become known to child welfare authorities.

Health consequences of opiate dependency in women. Opiate-dependent women are more likely than addicted men to seek treatment for medical complications of drug use rather than for the underlying drug dependency (47, 49). Their poor physical health is largely due to the addict type lifestyle which has particularly harsh effects on women. Neglect of normal hygiene, lack of routine health care and the medical and physical hazards of frequently supporting their opiate use by prostitution increase the incidence of such problems as chronic infections, anemia, hepatitis, hypertension, venereal disease, and urinary tract and gynecological disorders (50). Research also indicates that opiate dependent women have higher risks than other women of developing cervical and uterine malignancies and of having gonorrhea. They are more likely than addicted men to develop genitourinary and circulatory system disorders (49).

One example of the poorer health status of heroin addicted women relates to their dental problems. Dental abcesses have been found in more than one out of five (22 percent) of a sample of pregnant addicts and dental problems have been found in two out of five (41 percent) of those in drug abuse treatment. The decayed, missing or filled teeth score (the DMFT score) for opiate-dependent women is over 60 percent higher (2.8 percent versus 14.6 percent) than that for the general population (49).

Pregnancy and reproductive hazards. Pregnancy can be especially risky for the woman addict and her offspring due to her frequently poor diet, drug use, lack of adequate prenatal care, and poor general health. Serious obstetrical complications of pregnancy for addicted women include: spontaneous abortion, premature placental separation, amnionitis, breach presentation, preeclampsia, eclampsia, intrauterine death, premature labor, premature rupture of the membranes and septic thrombophlebitis (45, 51, 52). Ten to 15 percent of drug dependent women experience toxemia of pregnancy; nearly half of those addicted to heroin and lacking prenatal care have premature deliveries (53).

Infants born of addicted mothers have much higher morbidity and mortality rates than infants generally. The death rate in these infants is four times higher. They are much more likely to be born prematurely, to have congenital anomalies, to show growth retardation and to experience other medical complications such as neonatal opiate withdrawal (45, 51, 54). Although there may be greater than normal risks for the offspring of methadone-maintained mothers, the risks of this medically supervised opiate treatment group are much lower than those for infants born of heroin addicted mothers (53).

One characteristics of opiate-dependent women. An addicted woman has a much poorer self-image than does an addicted man. One woman researcher describes such women as feeling "mistrustful of women and abused by men." She sees them as accepting society's view that they are deviant--"over one-half of these women agreed that 'women addicts are worse than men addicts' (56). They have also been found to suffer disproportionately from depression and anxiety and to be more likely to respond to those feelings by isolating themselves and taking other drugs (56).

One explanation of the emotional distress of women addicts is that they have fewer social networks to provide support than do non-addicted women or even male addicts although it is not clear whether their addiction is a cause or an effect of this situation (57). Over half of those in treatment have dependent children. They are more likely to be responsible for their care than are male clients. This adds to their life stress (58).

A significant difference between male and female addicts is in their mode of initiation into drug use. Most (95 percent) males are introduced to drugs by other males, but most women (71 percent) are initiated into use by the opposite sex (59). Women are also more likely to use drugs in a conscious attempt to relieve their emotional problems rather than primarily for pleasure (69).

Criminal involvement is common--one study found that only 40 percent of the addicted women studied had not been arrested (61). When they are criminally involved, their crimes are most likely to include prostitution, low level dealing, small scale shoplifting, and forgery rather than burglary, grand theft or crimes of violence. Those crimes are more often committed by men (57).

Marijuana users. The largest group of women who abuse illicit drugs is also probably the most diverse and the one for whom the extent of the health hazard is least certain, but for whom the consequences could be most serious. At the time of the latest national survey (1982), the total number of American girls and women who had ever tried marijuana was about 24,600,000. About 7,000,000 were using the drug currently. But the public health implications of these statistics are more elusive. Since a substantial majority--3 out of 5 young adult (18-25) women have tried marijuana at some point in their lives, they increasingly resemble the general population in that age group. But even if we restrict ourselves to the much smaller number--that one-third of females who have ever used cannabis and who report current use--we know very few details about their characteristics. On the average they are young; only 3 percent of women 26 or older reported current marijuana use. But crucial details about their life-style--how many are married, how many use the drug heavily (e.g. on a daily basis), how likely they are to continue use or to use marijuana while pregnant, how any also smoke or use other drugs--are generally lacking.

Reproductive effects. A source of public health concern with respect to use of marijuana by women is its potential reproductive effects. Unfortunately, very little is known about this. Because marijuana's principal psychoactive ingredient, tetrahydrocannabinol (THC) so readily crosses the placental barrier, it must be regarded as a drug with potential impact on the developing fetus. Whether it actually effects the fetus and at what levels of use, is uncertain. A study of 1,690 mother/infant pairs done in Boston (62) suggests that marijuana use during gestation is associated with the low birth weights and fetal abnormalities resembling the fetal alcohol syndrome. The authors of this study concluded that "women who used marijuana during pregnancy were five times more likely to deliver infants with features considered compatible with the fetal alcohol syndrome" cautioning, however, "against the firm conclusion that marijuana use causes fetal growth retardation" (62). A study of 313 women of whom 41 were marijuana users enrolled in a low-risk home delivery obstetrical program found slightly higher dysfunctional labor rates (43 percent in the drug users versus 35 percent in non-users), precipitate labor (13 percent versus 8 percent) and meconium staining--a sign of fetal distress (17 percent versus 13 percent) (63). As in the Boston study, the problems of controlling for other possibly confounding variables such as smoking, maternal health history, diet, and other drug use make firm conclusions regarding the role of marijuana difficult.

A study of 26 young women who smoked marijuana 3 or more times per week for 6 months or more found a higher frequency of anovulatory menstrual cycles and a shortened luteal phase in persons in this group compared to a control sample of non-users (64). Both of these characteristics are associated with reduced fertility. Unfortunately, the users also differed from the non-users in their levels of alcohol use, sexual activity and possibly in other ways as well, all of which may have also affected their reproductive cycles.

In animal studies, which often employ much higher marijuana (or THC) doses than people usually take, adverse reproductive effects such as supression of production of female hormones and changes in ovarian function in female test animals have been found. Suppression of estrogen production and of ovarian function is a common finding. Female monkeys who were given oral dosages of THC, corresponding to high dosage human marijuana use, for a year or more showed signs of reproductive failure. Their offspring died more frequently than those of undrugged animals either during pregnancy or shortly after birth (65).

An earlier report by Stenchever, et al., implicated marijuana as a mutagen, but the bulk of the better controlled studies now suggests that marijuana has problably no significant mutagenic or cytogenic effects in man (66). Although extracts from marijuana smoke have produced dose-related mutations in bacteria, and marijuana has been shown to affect chromosome segregation during cell division the clinical significance, if any, of these findings is yet unknown (67).

Since marijuana smoke contains components also found in tobacco smoke, one can expect similar effects of both substances on the reproductive process. For these reasons, smoking marijuana and tobacco during pregnancy should be actively discouraged.

Other hazards of marijuana use. A wide range of other hazards of marijuana use have been identified. These include effects of the acute intoxication-- the "high"--on mental activities such as attention, perception, memory, and psychomotor performance. Marijuana intoxication may interfere with learning or increase the risks of driving or of performing other demanding perceptual motor tasks. There is little basis for believing these pose greater or different hazards for women than for men. It is quite likely, however, that the same amounts of marijuana have greater effects on women than on men because of their generally smaller size. It is well known that alcohol potentiates the effects of marijuana. The combined effect of using marijuana and alcohol (or other drugs) might also be expected to be greater in women than men. The ratio of women to men seen in hospital emergency rooms who have marijuana-related incidents corresponds roughly to their respective rates of use. This suggests that acute adverse effects do not occur any more frequently in women than in men.

Since marijuana smoke contains many components similar to those of tobacco smoke, chronic heavy marijuana smoking is likely to have effects on the respiratory system similar to those of cigarette smoking--though possibly at lower levels of use--and may eventually produce carcenogenicity. Chronic use may also have adverse effects on those with impaired cardiac function (67). Such effects may be more important for women who continue to use marijuana post menopausally the time when their rate of heart disease begins to approach that of men. Since few Americans of either sex have used marijuana long enough for the cardiac effects of middle or later life to become evident, this is speculative.

Large scale epidemiological studies of long-term users have not been done although there have been clinical reports of loss of interest in conventional activities--an "amotivational syndrome"--and of intellectual dulling and memory difficulties in some heavy chronic users here and abroad (67). How characteristic these findings are of heavy users more generally is not known. Since women are much less commonly heavy users at this time, there is little reason to think such putative effects of marijuana use are likely to be more frequent in women. Because of the smaller size of the average woman, use at the same level as men over the same period might have greater chronic effects (as with alcohol). If the persistence of marijuana-derived compounds in fatty tissue has important implications for chronic effects, women with their higher fat content, might be more vulnerable than men of comparable weight who have used the same amounts.

Non-medical Use of Psychotherapeutic Drugs by Women

Women who use prescription psychotherapeutic drugs outside the medical care system are sufficiently different in their drug use patterns, demographic characteristics and contact with the health care system to be described separately. Anecdotal reports, clinical observations, and a very limited amount of more systematic data are the source materials for such descriptions. The majority of these women are over 25, older than the young adult group (18-25) which most frequently abuses drugs (37, 68).

These women differ from misusers of prescribed drugs in two important respects:

- They use psychotherapeutic drugs for their pleasurable psychic effects as well as to "treat" themselves for physical and emotional malaise.
- The source of the drugs is usually either illicit or quasi-legitimate--friends relatives, "script-doctors" and male non-medical supplies are frequent sources (69, 70).

These women are often described as "polydrug" users, who often prefer a primary drug, but use another drug when the preferred drug is unavailable or to enhance its effects.

The psychotherapeutic drugs used are the minor tranquilizers and various sedatives. Some women also use amphetamines. Although illicit drugs such as marijuana and cocaine also may be used, they are not the drugs of choice in this group. Heroin is rarely used although some women in this group may have earlier histories of heroin addiction.

Reports from emergency room and treatment program personnel describe these women as under high stress, often trying to cope with troubled marriages, abandonment by husbands, job losses and poverty, responsibilities of single parenthood, and long histories of severe problems related to the stark reality of their lives. Their use of psychotherapeutic drugs involves what Shader and Anglin (71) have called an "alternative" or "street" pharmacy system. The drugs are obtained in the illicit and quasi-legitimate market place and are taken largely for symptoms like those for which physicians often legitimately prescribe them. But, as is true of opiate dependent women, these women also make little use of the conventional health care system and they are unlikey to seek the help of mental health specialists.

Prevalence and patterns of use. The major national probability sample of prescription drug use already cited also found that 3.6 percent of the American women (and 2.5 percent of the men) reported the use of a psychotherapeutic drug obtained outside medical channels, mostly through friends and relatives (38).

While the exact number of more serious abusers in this group is uncertain, there is little question that it is large. Finnegan (51), basing her estimate on an earlier study of regular users of non-opiate psychotherateutic drugs, suggests that the number of women using psychotherapeutic drugs obtained without a prescription may be ten times larger than that of women using illicit narcotics.

In NIDA-monitored drug abuse treatment programs, primary abuse of these psychotherapeutic drugs accounted for over a fifth of admissions of women in 1981 as follows:

Amphetamines	9.4 percent
Tranquilizers	4.6 percent
Barbiturates	3.5 percent
Other sedatives	4.3 percent

Total: 21.8 percent of admissions

Women admitted with primary problems involving these drugs were mostly White (86 percent). Among the White women admitted use of tranqualizers one-half (52 percent) were over age 29 (68).

Women clients admitted for treatment of tranqualizer use rarely (under 2 percent) reported secondary use of heroin, cocaine, or hallucinogens. These clients sometimes made secondary use either of alcohol (21.8 percent) or of marijuana (11.8 percent). Most reported no secondary drug use (34 percent). Two-thirds (64 percent) of women clients admitted for abuse of psychotherapeutic drugs had received no prior treatment for their drug problem (68).

A study of 269 emergency room admissions of women for overdosages of sedatives and tranquilizers also contributes to our portrait of this group. The two almost equally dominant motives given by the women for having overdosed were to commit suicide (38.5 percent) or to self-medicate (37.5 percent). Only one-fourth (24.3 percent) of the women had overdosed while trying to "get high". One-half (50.7 percent) of these persons had obtained the sedative or tranquilizer involved from a non-medical source (71).

Health consequences. The non-medical use of drugs by this group--while not unique to them--involves all the health risks associated with any chronic misuse of psychotherapeutic drugs. These hazards are discussed in the next section describing women who misuses these drugs when they are prescribed.

The fact that these drugs are obtained from non-medical sources underscores the more unconventional life circumstances and high levels of stress associated with their use. Group members have lower incomes, lower levels of education and poorer physical health than women for whom the drugs are medically prescribed. These factors, together with their frequently troubled life situations, probably contribute to their more indiscriminate patterns of self-medication. Self-medication under these circumstances more frequently leads to the use of many drugs at the same time and to overdosing.

Polydrug use is hazardous at all stages of pregnancy particularly when associated with poor nutrition, poor general health, and the inadequate prenatal care usually received by these women. Health onsequences for both the mother and the neonate have some similarities to those for the heroin addict and her offspring (53).

Heavy drinking by some of these women is likely to exacerbate the effects of the other drugs used. Alcohol use is a major precipitator of overdosing, of driving-related accidents and of drug-related suicide (69, 72).

Misusers of Prescribed Psychoactive Drugs

As indicated, women account for nearly two-thirds (64 percent) of all patients for whom psychoactive drugs are prescribed in the United States (73). Seventeen million women between 18 and 79 are estimated to have used at least one psychotherapeutic drug in 1979. The vast majority obtained these psychoactive drugs by a physician's prescription (38). Benzodiazepines, tranquilizers with trade names such as Valium and Librium, were the most commonly prescribed--over two-thirds of the group received them. Most of those for whom psychoactive drugs are prescribed use them on a short term or infrequent basis, but about 2,000,000 women (in 1979) are estimated to have used these drugs daily for a year or more (74, 75, 76). These chronic users are potentially at greatest risk of adverse health effects.

Prevalence and patterns of misuse. Although non-medical use of what are normally medically prescribed psychoactive drugs is included in attempts to survey the dimensions of drug abuse in America, misuse or abuse of these drugs is rarely precisely defined or quantified. Some of the less precise indicators of misuse are:

- Long-term chronic patterns of use not sanctioned by sound medical practice.
- Self-administration or self-medication in which the dosage of prescribed drugs is altered or similar drugs substituted without medical sanction, but the drugs are used for the purposes originally prescribed.
- Use of prescribed drugs for other than the prescribed purpose such as to achieve a "high".
- Sharing prescribed drugs with others for whom they were not prescribed or obtaining such drugs from friends or relatives and using them without medical supervision.
- Use in connection with a suicide attempt.
- Use in combination with other psychoactive drugs whose affects may be increased by combined use.

Self-medication, determining one's own dosage and frequency of use without medical sanction, is fairly common although the evidence for this is generally anecdotal. Women are more likely than men to escalate their prescribed dosages and to pressure physicians to increase or to extend their psychoactive drug prescriptions, (77, 78, 79). Wesson and Smith (80) describe a gradual transition during which patients receiving sedatives move from medically complaint use to escalation and supplementation, seeking multiple prescribers and quasi-legitimate drug sources on a routine basis. But national data are lacking on the prevalence of such misuse.

In one followup of 213 patients who received prescriptions for sedative-hypnotics in a family practice, 13 percent were defined as possible misusers. Four out of five of these were women. One-fourth of the misusers had taken the drugs more often than prescribed. Two-thirds of the misusers had shared their medications with family members and friends. Sixteen percent of the misusers had taken the prescribed drug with another psychoactive medication in order to get the combined effect. Two of the four patients who had done so had sought outside physicians to prescribe another psychoactive drug (81).

Overdoses and suicide attempts with physician prescribed drugs of this type are common. One study of 494 overdoses of sedatives and hypnotics in four urban hospitals in 1979 found that one-half of the women victims had overdosed on prescribed medication. Thirty-seven percent of these had been using their prescription drug daily for 60 or more days. These "medical abusers" represented 43 percent of the suicide attempts, 51 percent of the accidental overdoses and 6 percent of the recreational "misadventures" reported by the patients themselves (71).

One-third of those who had taken overdoses that included diazepam had serum blood levels with ratios of primary drug to active metabolites indicating chronic rather than acute drug use. Moreover, these levels were high enough to potentiate the sedative effects of alcohol (and to cause an acute overdosage (71).

Although data on drug source are not available on drug related episodes reported to DAWN emergency room personnel and medical examiners, local studies suggest that from 50 to 70 percent of the drugs involved were obtained by prescription (71, 72).

Health consequences. Fortunately, the benzodiazepines that make up at least two-thirds of the psychoactive drugs prescribed for women are relatively safe even when overdoses are taken (75, 76).

In two studies of overdose involving benzodiazepines, no deaths were directly caused by these tranquilizers although the levels of these substances found in the blood serum did play some role in the acute reaction or in the deaths that resulted from overdose. (71, 72).

Some minor and short-term adverse effects on neonates have been reported as due to the use of benzodiazepines during labor. Respiratory depression was the most common effect. However, no increase in neonatal morbidity or mortality followed. These findings have, however, led to the recommendation that these agents be used in pregnancy only when there is an absolute need (75).

Although acute morbidity and lethality with the benzodiazepines effects include drowsiness, depression, ataxia, and muscular weakness. In one study of patients seen in a family practice, one-third of those receiving these drugs reported side effects. Two of these side effects--drowsiness and depression--were experienced by 20 percent of those reporting such effects (81).

"Hangover" and "rebound insomnia" have been reported with two benzodiazepine tranquilizers, flurazepam and nitrazepam (75).

Behavioral impairment with low single doses of the benzodiazepines has been detected under laboratory conditions. In this controlled setting, reaction times, coordination, visual-motor, and driving performances were mildly, though significantly, impaired even on the day after administration (75, 76). No studies on the duration of these effects or their significance for everyday performance outside the laboratory have been done.

Mild physiological dependance at high therapeutic doses has been reported. A well controlled study of clinically anxious patients treated with daily dosages of 20 to 40 mg. of diazepam for up to six months suggests that treatment for more than four months is likely to result in some withdrawal symptoms and a temporary return of anxiety and depression when the drug is discontinued (82).

Elderly Women

Concern regarding drug abuse among elderly women is resulting from the "greying of America." Analyses by the Bureau of the Census indicate that the elderly--defined as those 65 or older--constitute the most rapidly increasing segment of the population. Three out of five in this age group are women. By the middle of the next century one in five--now one in ten--women will be elderly.

Elderly women are more likely to be widowed and living alone than are men of the same age and loneliness and depression are significant problems. About five percent of those over 65 now live in nursing and personal care homes. By age 85, more than one in five (22 percent) reside in such homes. Seven out of ten (71 percent) nursing home residents are women (83).

Because women predominate among the elderly and because elderly women have higher rates than men of such diseases such as hypertension, arthritis, and diabetes, they are more likely to be taking multiple drugs and are at higher risk of potential drug misuse.

With advancing age and the onset of chronic illness, the need for medication and primary care becomes still more pronounced. Increasing medication requirements, restriction of their mobility and social environments, and altered metabolism increase the elderly woman's risk of adverse consequences and potential drug misuse (84).

Patterns and prevalence of drug misuse. Although the elderly comprise 11 percent of the population, they receive 25 percent of all prescriptions. They also make significantly greater use of prescribed psychoactive drugs such as tranquilizers, sedatives, antidepressives and antipsychotics (66). Fifty percent more elderly women than men, ages 65 to 79, reported taking such drugs in the last national survey of use (38). More than one in four (27.5 percent) elderly women were taking these drugs compared to one in six (16.2 percent) men.

Few research studies have focused on drug use by the elderly and fewer still have attempted to differentiate between patterns of use, misuse, and abuse. The lack of adequate data has resulted in controversy over the prevalence of drug problems among the elderly. The research that has been done suggests the following:

- Underuse and omission of prescribed medication are the principal forms of noncompliance in this group.
- Combining prescribed drugs with alcohol and over-the-counter drugs is frequent (85) and results in serious risks of accidental overdose and injury because of drug potentiation and drug interactions (86, 87).
- Concurrent prescribing and use of multiple drugs (polypharmacy) is common. One study found that three-fourths of the patients in one long term facility used three or more drugs concurrently--three out of five had taken a psychoactive drug within the past year (88).
- Inappropriate and excessive administration of prescribed drugs to the elderly in long-term care facilities is frequent although its exact incidence is not known (85, 87, 88, 89).
- Not only are more women at risk because of their predominance among the elderly, they are much more likely to be given these drugs than are elderly men (90, 91).

While prescribed use is correlated with being female and being anxious (90), misuse is correlated with being chronically physically ill (92). Two studies of the non-institutionalized elderly have found a 7 percent prevalence of drug misuse (93, 94). This research found that drug misuse was significantly increased as the number of prescribing physicians and dispensing pharmacies increased, but was unrelated to gender.

Although the evidence suggests problems of misuse rather than of deliberate abuse and addiction in the older population, some experts believe this situation may change. As more people who were drug abusers at earlier ages enter the ranks of the elderly, they may be more likely to abuse the psychoactive drugs prescribed for them and the incidence of abuse in this group will increase (95).

Health consequences. Health consequences associated with psychoactive drug use in the elderly have recently been reviewed by the National Institute on Drug Abuse (84, 96). These are:

- Adverse drug reactions or side effects including those from multiple drug interactions.
- Overdoses.
- Suicides.
- Chronic Dependency and Addiction.
- Affective Disturbance.
- Insomnia.
- Impairments of cognitive and motor function which may lead to institutionalization.

Adverse reactions to drugs are more common in older people. They are the result of changing physiology and heightened sensitivity to drugs in the elderly and of changed patterns of drug distribution in the body (86, 97). Compared to younger adults, these changes in the elderly result in higher acute drug levels, increased retention and storage, and longer duration of action, especially of psychoactive drugs. This heightened sensitivity to some drugs, and to alcohol, increases the likelihood of over-medication, drug interactions, and side effects (98).

Side effects of drugs are estimated to be twice as frequent in older people as in younger adults (96). Among them are, nausea, vomiting, skin rashes, mental confusion, hair loss, heart palpitations, and asthma. Three serious neurological conditions or disorders that may be drug-related--seizures, dementia and tardive dyskinesia--especially are problems in the elderly. Two very disruptive side effects of sedative-hyponotic use in the older population are "drug dependency insomnia" and depression (76).

Drug interactions occur when one drug increases, decreases, or otherwise changes the action or effects of another drug taken concurrently and these interactions occur often in older people. Alcohol and many prescribed psychoactive drugs interact. Inadvertant overdoses and accidental death can occur as a result of the potentiating effects of taking more than one psychoactive drug simultaneously. Injury or death may also be indirectly caused by the combined effects of the drugs on alertness or on the psychomotor coordination needed in daily activity. The role of the benzodiazepines in potentiating the lethal effects of other drugs has already been described in the section on the abuse of prescribed psychoactive medication.

Particularly serious side effects of psychoactive drugs in, the elderly are confusion or erratic behavior so severe that institutionalization seems to be required. These persons may be labeled "demented" or "senile" when, in fact, their condition is reversible. A recent report found that 15 percent of older patients admitted to a State mental hospital were actually suffering from reversible drug toxicities (96).

Although preexisting psychological factors obviously play a role in suicide, there a number of suicide attempts by the elderly that are related to the use of prescribed drugs. Some medications can precipitate depression in those who are emotionally or psychologically vulnerable. And, as has already been noted, women more frequently than men, at every age, attempt or successfully commit suicide with prescribed psychoactive drugs (46).

Data from Dade County, Florida, indicate that among the elderly, the proportion of suicides using sedatives steadily increased from 1955 to 1975. Suicide induced by all drugs increased by over 70 percent during this period. Depression was cited as the primary reason why older women attempted suicide with chronic illness only a secondary cause (96).

A note on prevention. Inappropriate diagnosis and prescription have been identified as significant factors in drug side effects and over-medication of the elderly. While compliance with drug use and other patient factors pose problems for the physician treating older patients, there is a growing consensus that most physicians are inadequately trained in geriatric pharmacology and particularly in the special problems of treating the older woman (99, 100).

Women Who Use Tobacco

The President's Advisory Committee for Women (74) stated that cigarette smoking may well prove to be the major health problem for women in the 1980s. The Report of the Surgeon General on the Health Consequences of Smoking for Women established through epidemiological studies, that women who smoke face many of the same health risks as their male counterparts (101). For example, Houston (102) reported that tobacco related lung cancer mortality among women increased from 4.6 per 100,000 in 1950 to approximately 20.9 per 100,000 in 1982. It is anticipated that by the mid-1980s, lung cancer will exceed breast cancer as the leading cause of cancer mortality among women because of the increased numbers of women who smoke. In addition, it is now known that women smokers who are pregnant are at above average risk for spontaneous abortion, for a greater incidence of obstetrically related bleeding, and for increased fetal and neonatal deaths (101).

Since the publication of the first Surgeon General's Report in 1964, the proportion of Americans who smoke cigarettes has declined from a high of 51 percent in mid-1960's to a current 37 percent (101). The percentage of men who smoke decreased by 28 percent between 1965 and 1979, while the decrease for women during this same period was only 10 percent. More discouraging are reports of the percentage of young women who now smoke, which indicate their smoking exceeds that of their male counterparts (among high school seniors, 31.6 percent of females versus 28 percent of males; among 18 to 25 year olds, 42 percent females versus 37 percent of males (3, 37).

Although the health hazards of smoking have received significant emphasis, little is known about the behavioral aspects of tobacco use particularly among women. Within this century, cigarette smoking has changed from an atypical mode of tobacco use limited to men to the predominant mode of tobacco use in which women are increasingly encouraged to take up the habit. In the past, it was generally believed that young girls were less likely to smoke than boys, and if they did, more likely to begin later in life. Unfortunately, neither of these facts now appear to be true. Over half of all high school seniors who now smoke began doing so by the ninth grade (103). If these young women continue to smoke cigarettes there is little question that the health implications will be as grave for them as for men who smoke.

As the pharmacological role of nicotine in smokers' behavior has become better known, physicians and researchers have increasingly labeled cigarette smoking as an addictive disorder. Although women are now attempting to quit smoking at rates comparable to men, they more frequently report severe withdrawal symptoms and achieve lower rates of successful attempts to quit (101). To date, very little research has been done on possible gender differences as they relate to a pharmacological response to nicotine. This is of particular importance since survey research suggests that many smokers, especially women, report that tension redsuction is a major reason for continuing to use tobacco. This is of particular significance since women report more depressive symptoms and higher anxiety levels than men (104). It would appear important that future research be directed toward the examination of the role of nicotine in the addictive process, particularly as it relates to preventing the uptake of smoking among young women, improving cessation of smoking, and maintaining treatment effects for women who are attempting to quit smoking.

Mental Health of Women

Mental disorders in women and related social problems. The following section summarizes those mental disorders that are more common in women than in men. It also highlights such social problems as violence, rape, and sexual abuse which have special impact on women's mental health. Although impressive progress has been made, there are still some unresolved problems related to the reliability and validity of psychiatric diagnoses. As with many other diagnoses, agreement that a set symptoms occurs consistently enough to justify a particular rubric, is no assurance that the disorder described has the same etiology in all patients.

It should be emphasized that much of our knowledge of the gender-related frequency of mental disorders comes from data on treated patients rather than from health surveys assessing prevalence in the general population. Such data may partially reflect male-female differences in the willingness (or social pressures) to seek help for a particular emotional problem rather than the actual prevalence of the disorder.

The mental disorders are discussed in their approximate order of severity and frequence (more serious disorders that affect the largest number of women, followed by less severe and/or less common emotional illnesses). Since definitive data establishing severity and frequence in the general population are not available, this order is somewhat arbitrary. The amount of information about these illnesses in men and women differs widely--more is known about depression in women than about schizophrenia or the anxiety disorders for example. In no area can the research data available be regarded as more than fragmentary. Where not otherwise indicated, descriptions of the disorders are based on the current Diagnostic and Statistical Manual of Mental Disorders Third Edition, often referred to as DSM-III, the American Psychiatric Association's authoritative standard for diagnosing mental illness.

Affective disorders. These disorders include both the major and the specific affective disorders. A specific affective disorder is characterized by the chronic recurrence of similar but less severe symptoms (in either duration of individual episodes or extent of symptomatology) than those of the major disorder. However, to make a diagnosis of a specific affective disorder, the symptoms must have recurred frequently over a period of at least two years.

When depression is the dominant symptom--without an alternating elevated mood state--the disorder is classified either as major depression or as a dysthymic disorder if the symptoms better meet the criteria for a specific affective disorder.

A bipolar disorder (formerly referred to as manic-depressive disorder) is characterized by periods of depression alternating with an elevated mood state characterized by expansiveness, hyperactivity, pressure of speech, inflated self-esteem, distractability, and sometimes irritability. Its specific affective counterpart, cyclothymic disorder, is characterized by similar, but less extreme mood swings.

Bipolar disorder is estimated to occur with about equal frequency in women and men--a lifetime risk of about one percent for each (107). However, rapid cycling manic depressive illness--a subtype in which the mood swings occur four or more times a year--is more common in women.

In a major depressive episode the patient's mood is deeply despondent with a profound loss of interest in usual activities. Deep feelings of sadness, hopelessness, discouragement, and worthlessness predominate. Appetite and sleep are disturbed. There is usually a loss of libido and a decrease in energy level. Thoughts of death and suicide, or both, are common. Major depression is the most common serious mental disorder in women. Studies done in the United States, Iceland, Sweden, Denmark, and England have consistently found that women are at least twice as likely as men to have a major depression during their lifetimes. From 20 to 26 percent of the women studied had experienced a major depression compared to 8 to 12 percent of the men (107).

"Depression scales" measure the extent to which individuals suffer from depressive symptoms which may or may not be part of a full blown depression. When samples of the general population in various parts of the United States have been assessed using the NIMH Center for Epidemiological Studies Depression Scale (CES-D) women had higher scores twice as often as men (107). Factors that have been found to be associated with higher scores are:

- Being female.
- Being of lower socioeconomic status.
- Being separated or divorced.
- Experiencing stressful life events.
- Lack of an intimate confiding relationship.

Personality factors which have been reported to be associated with diagnosed depression include dependency, low self-esteem, and obesssionality. Groups at greatest risk for both depressive symptoms and for major depression are "women, the young, the unmarried, and unattached and those who have experienced an interpersonal loss" (108).

By contrast, bipolar depressive disorders have been found to be slightly more common among those of higher social class and to be unrelated to marital status. The age of onset of these much less common cyclical disorders is about ten years younger than that for nonbipolar depression (108).

Recent findings regarding the rates of depression in persons in the multisite Epidemiologic Catchment Area Study are generally consistent with earlier work. This study of over 9,000 people from New Haven, Connecticut; St. Louis, Missouri; and Baltimore, Maryland; also found that women had higher rates of depression than men. Equal rates of bipolar disorders for both sexes were confirmed. The age of onset of depression was younger and the rate higher in those who grew up after World War II as compared to older age groups (109).

A recent study of young adults found that men and women suffering from a depressive mood of two or more weeks duration showed both similarities and differences. There was no difference between the sexes in the average length of the depressive episode. They also reported being equally impaired socially and vocationally and talked about their depression and related problems with friends and relatives to an equal extent. Women, however, reported more symptoms than men. Men more often seemed to forget their symptoms and the frequency and duration of their less recent depressive episodes. The women went to physicians much more often and were more likely to self-medicate their symptoms than the men (110).

Of interest is the fact that depression in the Old Order Amish religious community in Pennsylvania appears to be a significant exception to the usual female:male unipolar depression ratio of 2 to 1. Because this group is culturally and genetically homogenous and because alcohol, drug abuse, and antisocial behavior are culturally prescribed, it is an excellent natural laboratory for studying psychiatric epidemiology. The close knit nature of the community makes it unlikely that serious mental disorder goes undetected.

During the five-year period from 1976 to 1980, 112 active cases of mental illness were identified in this 12,500 member community. Seventy-one percent were diagnosed as having major affective disorders. Equal numbers of men and women were classified as unipolar depressives; slightly more men than women as bipolar disorders. The incidence of unipolar and bipolar disorders was about equal, an atypical finding since unipolar disorders are usually many times more common (111). However, it is not known whether the atypical sex ratio or ratio of unipolar to bipolar illness, represent a genetic or culturally determined difference or a methododological ideosyncracy of the study. One possible explanation for the fact that equal numbers of Amish men and women were diagnosed as being depressed may be the lack of alcoholism as a "depressive equivalent." In persons in whom heavy drinking is not culturally prohibited, an underlying depression may be expressed by alcoholism. Since alcohol is proscribed in the Amish community, depression cannot take this disguised form. This may result in a more nearly equal male:female depression ratio (107).

Affective disorders and reproductive events. Clinicians have long suggested a possible link between mental health in women and the reproductive events in their lives. Such a connection is now being more systematically investigated. Reproductive phases which have been identified as having possible emotional significance have ranged from the onset of menstruation--menarche--through child bearing and its aftermath to the end of reproductive functioning--menopause--either because of aging or surgical intervention.

Menarche, in our culture is of sufficient emotional significance to be remembered by most adult women. It has been identified by adolescent girls themselves as ushering in a more serious phase of their lives with constrictive and mildly depressive overtones (112). Premenstrual dysphoria reported by many women has been identified as a contributing factor to the higher frequency of depressive symptoms as measured on the CES-D scale (113).

While some women experience mood changes linked to the menstrual cycle, the exact nature of that connection is elusive. Hamilton (114) and her associates emphasize that only 20 to 50 percent of premenstrual complaints are actually confirmed by self-reports when women more systematically keep track of their menstrually related symptoms. These researchers emphasize the importance of examining the psychosocial context in which hormonally related alterations in responsivity occur. The dual dangers of oversimplification and overgeneralization argue for much more extensive research in this area to better understand the psychobiological implications of the menstrual cycle--and other reproductive events--in affecting mood states. While the specific biological changes of pregnancy or menstruation are limited to women, mood and behavioral changes temporally linked with reproductive life events also occur in men (e.g. depression associated with childbirth) (115).

Transient postpartum depression may occur in as many as half of women who give birth (116) and more severe emotional illnesses following childbirth have been estimated to occur in 1-2 mothers per 1,000 births (47). Although biological changes are probably involved, the stress of having a new infant, sleep disruption, and other pressures also undoubtedly play important roles. The basis for more serious reactions such as postpartum major depression or schizophrenia is not well understood. However, the most common point at which major depression occurs in women is following childbirth. It is estimated that one in four women, who have experienced a postpartum psychosis will develop a similar disorder following subsequent pregnancies (118). Pregnancy-related depression has also been found to be predictive of depression related to the use of oral contraceptives (119, 120).

Menopause, which signifies the end of reproductive life, has been traditionally described as dominating middle life in women and as a significant factor in "involutional depression" (121). But research in this area has often failed to distinguish adequately between menopause as such and other important intercurrent social events such as the stresses of changes in lifestyle, widowhood, children growing up, and declining social influence. A recent study involving a total of over 500 middle-aged married women related their menopausal status to scores on a standard scale of depressive symptoms--the CES-D. Higher depression scores were not found in the menopausal women. An association between social class and depression was found, however, leading the author to suggest "women's psychological status is more closely related to the distribution of material resources than to the hormonal changes of menopause" (122).

Depression and surgery in women. The question of the impact of surgical procedures involves not only the loss of emotionally significant portions of the body, but often the threat of a life endangering illness. A wide range of reactions have been reported-- from denial to severe postsurgical depression (118).

Age, premorbid personality, the degree of surgical mutilation, and the reactions of family and close friends are all involved in the emotional reactions of women to these major surgical procedures. Since the uterus and the breasts are closely tied to self-concept and the sense of female identity, the psychological significance of hysterectomies and mastectomies must be carefully considered. There are marked differences among professional opinions concerning some of the medical indications for these procedures and about the frequency with which they are performed. Because most surgeons are men, some critics have questioned whether the emotional implications for women of hysterectomies and mastectomies are adequately considered and whether other options are sufficiently weighed.

Why are women more frequently depressed? Given the fact that women report more depressive symptoms and are also twice as frequently formally diagnosed as depressed, the question becomes: Why? Three possible explanations that are not mutually exclusive have been offered:

1. The Artifact Hypothesis.
2. The Biological Hypothesis.
3. The Psychosocial Hypothesis.

The artifact hypothesis. The first of these, the artifact hypothesis, postulates that depression is actually equally common in both women and men, but that women are more likely to label themselves or to be labelled as "depressed" because of their greater willingness to seek help. Included in this explanation is the possibility of classification as care provider "stereotypes" which increases the likelihood that women will be diagnosed as "depressed." A recent study found no evidence to support this hypothesis. Women and men, matched for symptom level, were equally likely to label themselves as depressed and to be so diagnosed by trained interviewers. The authors concluded that the gender differences in depression that have been found are not artifactual, but instead accurately reflect reality (123). While some part of these differences may still be an artifact, the present consensus of many researchers is that gender differences in depression are predominantly real.

The biological hypothesis. The biological hypothesis posits that women are more vulnerable to depression because of the biological effects of the female reproductive cycle and sex linked genes or both. If this is so, recent research on the psychobiology of those depressive subtypes more characteristic of women may provide new clues as to the etiology of depression in women. Interpretation of research data also suggests that the steroid sex hormones may affect the brain physiology of brain neurotransmitters in ways that may have clinical significance. Since the response to anti-depressant drugs may vary among the clinical subtypes of depression that are sex related, the possibility of gender-linked response for treatment also deserves to be explored. In fact, there have been several reports of an age-sex effect on treatment outcome with a variety of antidepressant drugs. If female sex steroids contribute to some kinds of depression in some women, then this would be another sex specific stress factor. The finding of possible testosterone cycles in men supports the value of studying the relationship of sex steroids to mood and behavior in both women and men (113).

The psychosocial hypothesis. The psychosocial hypothesis takes two forms. One emphasizes the importance of demographic variables in understanding gender differences in depression. The other stresses learning and sex roles as causal actors leading to depression.

Marital status is an example of a demographic variable related to depression. Married people generally have fewer depressive symptoms than do those who are unmarried, regardless of gender (108). However, survey data have also shown that average depression scores were higher in women than in men when these women did not live in their own households, regardless of whether they were married, divorced or separated, or had never been married. Widowed women and women who were never married, but who lived in their own households, by contrast, had about equal--or lower--depression scores to those of men (124). A related finding in some, but not all, studies indicates that married women who work outside the home have less depression than those who are housewives. Employment, it has been suggested, reduces the vulnerability of women to life events that might increase the probability of mental disorders (125).

Other demographic variables that have been found to be related to depression are age, education, and socioeconomic status--including income level--occupational status, and work roles. As indicated, younger age groups (those 18 to 24); those with lower levels of education, income and employment; and those who are physically ill, have higher rates of depression than those more favored. Individuals with these characteristics are thought to be more likely to feel helpless, to have low self-esteem, and to experience higher stress (126). With the exception of the age variable, women are more likely to be disadvantaged compared to men in all the other categories.

The second aspect of the psychosocial hypothesis includes learning and cognitive explanations. Several related models, viz., a "learned helplessness" model, a "reinforcement theory" model, and a "cognitive" model have been developed. The learned helplessness model originated in animal research, but has since been confirmed in human experimentation. Dogs subjected to inescapable shock as part of their learning are poorer at escaping shock than those subjected to shock from which they can escape even when experimental conditions later make escape possible for both. The dogs who could not escape the shock apparently learn initially to be helpless. This laboratory phenomenon is thought to be analogous to human depression.

If individuals believe that they cannot control the outcomes of their actions they become depressed regardless of whether these beliefs correspond to objective reality. Pursuing the analogy, women are more often encouraged to think of themselves as "helpless" than men are and thus more likely to become depressed. Radloff and Monroe (126) cite numerous studies of child rearing and adult behavior which can be interpreted as "helplessness training" for females. In a related vein, the reinforcement model stresses the lack of, or low rates of, positive reinforcement in precipitating depression. Fewer rewards lead to fewer responses and greater passivity which, in turn, result in still fewer rewards. The subordinate role of women in our society is postulated as offering fewer rewards to them than to men. This also predisposes them to depression (126).

The cognitive model of depression is derived from clinical observation of depressed patients who tend to assume personal responsibility for failure. Depression is characterized by negative expectations and a strong conviction of personal inadequacy. The depressed individual denigrates the past and is pessimistic about the future (127). Again, sex roles and gender stereotypes are invoked to explain why women are more likely to have such attitudes than are men.

As indicated, these several hypotheses need not be mutually exclusive. Although the gender differences in depression and other mental disorders are probably real, the greater willingness of women to admit to emotional distress and to seek help may exaggerate those differences--and be reflected in the epidemiological data. Awareness of present or past premenstrual dysphoria in some women may also influence their behavior and self-perceptions. Finally, the psychosocial factors that have been invoked might be expected to play a role with--or without--a biological predisposition toward depression.

The paradoxical increase in depression reflected in the rising rates attempted suicide in women at a time of increasing role flexibility may be explained by a discrepancy between the rising expectations of women and continuing reality. According to this view, depression is more likely to occur when aspirations are raised, but thwarted by still discriminatory conditions than when things are at their worst (128).

In their comphrehensive review of sex differences in the epidemiology of depression, Weissman and Klerman (128) emphasized the contribution of psychosocial and biological factors to higher rates of depression in women. Included were cross-cultural studies of depression in cultures very different from our own. Longitudinal studies of women who do not assume traditional female roles in those countries in which increased female emancipation has occurred would also be valuable in assessing the contribution of psychosocial factors in depression in women. Consistent diagnostic criteria and broad community-based epidemiologic research are still needed to overcome biases in reporting and response that may distort present data.

Schizophrenia. Schizophrenia comprises a group of disorders more correctly referred to as the schizophrenic disorders. These are believed to be equally common in males and females. Age of onset is usually adolescence or early adulthood. Schizophrenics are typically disturbed in one or more of the following areas: a) content and form of thought, b) perception (usually hallucinations), c) affect (blunted or inappropriate), d) sense of self or identity, e) volition and self-direction, f) interpersonal relations, and, g) psychomotor behavior. Daily functioning is seriously disturbed and self-care may be impaired.

Although many investigations have demonstrated a genetic disposition toward schizophrenia, environmental, and psychological factors are also believed to be important. More recently, the concept of vulnerability has been stressed. The more vulnerable the individual, the more likely it is that repeated episodes will occur (129). The consensus is that schizophrenia is up to six times more common in lower socioeconomic groups.

Although most surveys have found schizophrenia to be equally prevalent in both sexes, some researchers believe sex differences may still be important. In an institutional setting, schizophrenic women have been described as more agitated and aggressive, less social, and less manageable than males (130). One explanation for this may be that schizophrenic women with those characteristics are more likely to be hospitalized than those who are more tractable and unaggressive.

The preponderance of male subjects in the studies that have been done may have obscured important gender differences in etiology and disease course. Among the reasons for this preponderance of males are:

- Some studies have been done in Veterans Administration Hospitals where male patients predominate.

- Males may be more common in the younger, acutely ill patients who are more often studied than are patients with chronic disease.

- Drug studies sometimes prefer to use male subjects to avoid complications of drugs resulting from the physiological change with the menstrual cycle.

- Behavior rating scales are frequently more suitable for evaluation of males or have been standardized using males.

A recent review of sex differences in schizophrenia concluded that women schizophrenics are more often characterized by better premorbid competence, later onset of illness and "atypical" schizophrenia. The author also points out that is has usually been assumed that schizophrenia is the same disease in both sexes, and that possible sex differences have rarely been incorporated into theoretical models (131). Women who are diagnosed as schizophrenic also have been described as showing more affective symptoms while men are quieter and more withdrawn.

Primary Degenerative Dementia. Alzheimer's disease is one of the disorders in the category of primary degenerative dementia. From 2 to 4 percent of those over the age of 65 are estimated to have primary degenerative dementia and its prevalence increases with age. There are few cases before the age of 49. Because of their greater longevity, Alzheimer's disease is a more serious mental health problem for women.

Alzheimer's disease is an organic disorder in which brain atrophy and other histopathologic changes occur. The disease has an insidious onset and deterioration progresses until death ensues. Memory impairment, often accompanied by personality changes such as apathy, lack of spontaneity, and withdrawal are early signs of Alzheimer's disease. In later stages of the disorder, individuals become mute, inattentive, and totally unable to care for themselves.

Anxiety Disorders. As the name anxiety disorders implies, the most prominent feature is either generalized anxiety when confronting a particular object or situation. The anxiety may range from a transient and relatively mild feeling of apprehension to an almost paralyzing irrational terror.

Among the anxiety disorders are the phobic disorders or phobic neuroses, including simple phobia and agoraphobia; and simple or specific phobias including the fear of animals, claustrophobia, or other fairly circumscribed fears.

Agoraphobic individuals are afraid of sudden incapacitation, including the possibility of loss of consciousness in a public setting where appropriate help may not be available. Such an individual becomes homebound, fearful of public places. Normal activities sometimes become so constricted that the phobia dominates the person's life. This phobia usually begins in late adolescence or the early 20s. It has been estimated that at any one time, more than a million women in the United States find their lives limited by this overwhelming fear and panic (131). Antidepressant drugs are widely used as a treatment for agoraphobics with panic attacks. However, most clinicians continue to treat these disorders conjointly with behavior therapy (repeated gradual exposure to the stimuli generating fear under conditions of relaxation) and psychotherapeutic drugs.

Anxiety states or anxiety neuroses include panic disorders. They also usually begin in late adolescence or early adulthood, but may appear at any time. Panic attacks are characterized by sudden onset of extreme fear and apprehension, and are often accompanied by feelings of impending doom. Physical symptoms such as palpitations, faintness, dizziness, sweating, and breathing difficulties are necessary for the diagnosis.

Despite the large numbers of victims of anxiety disorders, research in this area has lagged behind research on depression and schizophrenia. The diagnosis of an anxiety disorder is considered by many experts to be problematical and the treatment for it inadequate (132). Theories concerning the etiology of these disorders range from the psychoanalytic, with its emphasis on repressed sexual conflict, to behavioral models emphasizing conditioning and other learning. There are few adequate explanations for why women are more susceptible. Passive dependent personalities are believed to be more likely to develop agoraphobia suggesting that sex roles and "learned passivity" may be important in the etiology of anxiety disorders. As with agoraphobia, treatment often emphasizes progressively increasing the patient's exposure to stimuli and situations that are anxiety-provoking until the fear no longer occurs.

Somatoform Disorders. In somatoform disorders, the essential feature is the development of symptoms suggesting a physical disorder for which no organic basis is evident. This group includes the somatization disorders.

A somatization disorder is marked by recurrent multiple somatic complaints without an apparent physiological or anatomical cause. Onset is usually before age 30 and follows a chronic but erratic course. Such a disorder is estimated to occur in 1 percent of females and is rarely diagnosed in males. Individuals suffering from it usually have had numerous medical evaluations.

In conversion disorder, sometimes called hysterical neurosis, there is a loss--or marked change--in physical functioning which is attributed to an underlying psychological conflict or unconscious need. "Classical" conversion symptoms include paralysis, seizures, blindness, and other symptoms suggestive of neurological disease, which again, are without apparent physical basis. Histrionic and dependent personality disorders diagnosed more frequently in women than in men are predisposing conditions in the development of these conversions. While once quite common, such disorders are now rarely seen.

Psychogenic pain disorder, involves severe and prolonged pain that cannot be adequately explained on a physical basis. Although it may begin at any time in life, it typically begins in adolescence, or early adulthood and severe psychosocial stress is believed to be etiologically important.

Dissociative Disorders. Dissociative disorders include psychogenic amnesia and the rare condition, multiple personality. In psychogenic amnesia, the person is unable to recall important personal information. The memory loss is too extensive to be explained by ordinary forgetfulness and is without an organic cause. The amnesia may involve a specific period of time or date from a particular point until the present. In some cases, the individual's entire past may be forgotten. While most common in females in their teens and twenties, dissociative disorders have also been reported in young males under conditions of wartime military stress.

Multiple personality, while rare, is well known because of the popularized accounts of it. It is most often found in a young woman, who displays two (rarely) or usually more, separate and distinct personalities, one of which is dominant at any one time. Each is integrated and complex with unique memories, behavior, and social relationships. Changes from one personality to another are usually sudden and often the result of, or accompanied by, psychosocial stress.

A recent review of patients with multiple personality disorder stressed the fact that these patients much more commonly have been sexually and physically abused in childhood than other patients. Abuse experienced has included repeated sexual abuse, beatings, cuttings, and burnings. Some patients were locked in closets or tied up. Four out of five reported repeated physical abuse; nearly three out of four experienced sexual abuse. This pattern of abuse is believed to have etiological significance. Patients frequently report that developing alternate personalities was the only way that they could escape these painful experiences (133, 134).

Personality Disorders. Personality patterns, which are inflexible and maladaptive or both and which impair social or vocational functioning, are called personality disorders. Those more common in women are: histrionic personality disorder, borderline personality disorder, and dependant personality disorder.

Histrionic personality disorder (sometimes termed hysterical personality) is common and characterized by overly dramatic, excited, and intense behavior. These women are often described as shallow and manipulative; and their interpersonal relationships are typically unsatisfactory and stormy.

Borderline personality disorder is a relatively recent, less well defined and even more controversial diagnosis than the others in this category. Instability in interpersonal behavior, mood and self-image are hallmarks with frequent impulsive, unpredictable and self-destructive behavior. Inappropriate anger, uncertainty about gender identification, and about long-term goals and values, together with feelings of emptiness or boredom are also common.

Dependent personality disorder is characterized by the individual assuming a passive role and permitting others to take responsibility for major areas of her life. This type of woman subordinates her needs to those of others upon whom she is dependent, often with accompanying anxiety and depression.

Little research has been done on the causes and treatment of these personality disorders. The use of these diagnostic characterizations have also generated considerable controversy. Feminists and others concerned with sexism in mental health studies have argued that the diagnostic descriptions are caricatures of ways in which women are traditionally encouraged to behave.

Eating disorders. The eating disorders--anorexia nervosa, bulimia, and obesity have received considerable emphasis in both lay and professional publications in recent years. All are more common in women and two of them--anorexia nervosa and bulimia--occur almost exclusively in women. Each is complexly related to social attitudes and expectations regarding body image which more profoundly affect women than men.

Anorexia nervosa. Anorexia nervosa has, as its essential elements, dramatic weight loss, intense fear of becoming obese, and a refusal to maintain normal body weight. As weight loss increases, such signs of starvation as amenorrhea, hair loss, hypothermia, slowed heart rate, and hypotension appear. If untreated, this disorder may lead to death either from severe malnutrition or from suicide. Anorexia occurs primarily in women--95 percent of the cases--and as many as 1 in 250 females between ages 12 and 18 may develop it. Some cases have recently been reported in older women as well.

Clinicians stress the "relentless pursuit of thinness" as the central psychological feature of the illness and emphasize the profound misperception of body image. This is of delusional proportions and leads to compulsive dieting, purging, vomiting, hiding of food, and a paralyzing sense of ineffectiveness. Objective criteria used for diagnostic purposes include a loss of about a quarter of the usual body weight and the other physical signs of severe undernourishment already described.

Bulimia. Bulimia has three hallmarks:

- Episodic binge eating with an awareness that this pattern is abnormal.
- Binge eating followed by excessive dieting, vomiting, and the use of laxatives and diuretics.
- Depression accompanied by self-deprecating thoughts following the food binges.

Like women with anorexia, those with bulimia exhibit great concern about their weight, making repeated attempts to control it. Their preoccupation does not, however, approach the delusional proportions of the anorexic. In one study the students reported having experienced the major symptoms of bulimia. Nearly nine out of ten (87 percent) of these were females. They typically had a history of being overweight or were in the upper portion of the normal weight range (135).

A double blind study of bulimic women using the antidepressant, imipramine, showed that these patients were responsive to imipramine and to other anti-depressants. This suggests that bulimia may have a biochemical as well as an emotional basis and, possibly, a pharmacological cure. The rate and time of response to the drugs paralleled that of patients being treated for depression (136). At present, the possible connection between bulimia and the affective disorders is not well understood.

Obesity is not generally associated with a distinct pyschological or behavioral syndrome. It is, however, associated with certain physical illnesses such as hypertension and gall bladder disease. There is good clinical evidence that psychological factors frequently play a role in the development of obesity. By the usual criteria of normal weight, the overall ratio of obese women to obese men is estimated to be 3 to 2 and by the age of 30, women are more likely to be overweight than men. Those of lower socioeconomic status are more commonly overweight because of their starch-based diet.

The greater prevalence of eating disorders in women is probably related to the extreme value placed on slenderness in women in our culture. There is evidence that women are more harshly penalized for being overweight than men. This profound emphasis on slimness ignores obvious genetic differences in body types, subordinating these to an esthetic ideal of slimness. It also ignores the evidence that enduring loss of weight is very difficult for most individuals to achieve despite their strenuous efforts (137). Moreover, for many women, the inability to control food intake and body weight becomes an index of a general lack lack of control over their lives. Thus, it may be a ignificant contributor to continued feelings of inadequacy. The preoccupation with slimness is also believed to play a role in stimulant buse in women.

Treatment Settings. As we have noted, much of our knowledge about the gender-related frequency of mental disorders comes from data on patients who have been treated. Patients with mental disorders are seen in a variety of treatment settings. These include the primary health care system (6) as well as the specialty mental health sector (138).

As many as one in five patients in primary health care systems is estimated to have a treatable psychiatric disorder (139). About three-fourths of those diagnosed as having such mental disorders are female (140).

Three out of five patients with mental disorders, regardless of gender, seek help from the primary health care system; only 20 percent are seen by mental health professionals. Because most patients with mental disorders are seen within the primary health care system, it has been referred to as "the de facto mental health services system" (138). In one study of over 11,000 patients who sought help from 57 internists and general practitioners, 6 percent said they did so specifically for emotional stress or to be counseled; 4 out of 5 of these were women (141). In about half of the patients diagnosed as having a psychiatric disorder, it was indicated that environmental stress played a causal role or precipitated seeking help (142, 143). Most patients with emotional problems who are seen within the primary care system are given a brief interview and a prescription for a psychotherapeutic drug (144).

Since women predominate among those requesting help for emotional problems within this system and the use of a tranquilizer or other daytime sedative is the usual treatment, it is not surprising that women more frequently use such drugs. Although excessive use of psychotherapeutic drugs can be a problem, national survey data indicate that most patients receiving these drugs limit their use to the prescribed purpose (38).

On balance, concern about potential abuse must be tempered by the recognition that these newer anxiolytic (anxiety relieving) drugs are very useful in helping patients cope with emotional problems particularly when these are exacerbated by temporary environmental stress. An earlier extensive review of the use of psychotherapeutic drugs by women concluded that "the prescribing of these drugs is largely rational." While the report noted the need to be alert to possible abuse, it emphasized that appropriate use "should not be discouraged for those suffering from disorders for which these drugs have been shown to be safe and effective" (145).

Deinstitutionalization and women. Deinstitutionalization--the policy of encouraging mentally ill or otherwise disabled individuals to live outside of mental hospitals or other public institutions--has had far reaching effects on women. While there are positive effects of this policy, there are also important negative implications that are likely to be greater for women than for men. For example:

- When homelessness for mentally ill women results, there are very few shelters catering to their needs.

- Women are more frequently exploited sexually as a result of deinstitutionalization.

- Seriously mentally ill women are more likely than men to have direct child care responsibilities and thus this type of disability may have greater impact on a second generation.

- Women as the "caretakers" in our society are more likely than men to have responsibility for those released from institutions or encouraged to live outside of them.

Although there is agreement that these are among the likely consequences of deinstitutionalization, Bachrach's very recent review of the literature (146) found little systematic data on any aspects of these problems. One of the few areas that has been examined is the need for family planning services that are suited to deinstitutionalized women with serious mental illness. Family planning services are important because many chronically mentally ill women find parenting specially stressful and require information and guidance about contraceptive methods that are most suitable for them (147).

The vulnerability of chronically mentally ill women to sexual exploitation and violence has been noted, but how frequently thse women experience such assaults is not known. Among homeless women, the problem is likely to be magnified by the dearth of public shelters. While such facilities are in short supply for both sexes, the shortage is even greater for women. Moreover, when facilities are available, a double standard for admission is likely to prevail. Women's shelters are less likely to admit women who are drunk, who use hard drugs, or who have physical disabilities (148).

Lamb and Grant (149) who studied inmates of Los Angeles county jail describe the diversion into the criminal system of chronically mentally ill women who would have been unlikely to have been jailed prior to deinstitutionalization. The criminal involvement of these women resulted from difficulty in finding housing, use of prostitution as a means of support, acts of violence against them, and their inability to obtain adequate psychiatric care.

Stoner (150) in her recent review of the literature on homeless women, points out that "there is considerable documentation to indicate the presence of large numbers of severely disturbed individuals in streets and shelters, many with histories of psychiatric hospitalization." One informal census of a Los Angeles skid row district estimated that 90 percent of the women were mentally ill and had been hospitalized for psychiatric disorders. Stoner also underscores evidence that there are proportionately fewer shelter facilities for women. When they do exist, they tend to have lower standards of care than do facilities for men. The poor quality of these facilities and their very limited availability, Stoner asserts, makes the hazardous life of the streets comparatively attractive.

Although the exact dimensions of these problems are not known, there is a consensus that the needs of women who are chronically mentally ill and who have been deinstitutionalized are not being met.

When women serve as caretakers of those who no longer reside in institutions, the burden of that care is likely to be especially onerous. There are few public mechanisms for providing any respite for these women from this demanding role. Again, few statistics exist, but there is little question that this is a significant problem.

Finally, there are little data on the extent to which serious mental illness of deinstitutionalized mothers affects their children.

Violence and victimization. Violence and victimization, problems to which women are particularly vulnerable have serious effects upon the mental health of women. This brief discussion will be devoted to those areas in which some, data are available or in which some educated guesses can be made. It will not deal with the many other types of destructive behavior that may have disproportionate impact on women victims--and their mental health--but for which no data exist.

A significant factor in the victimization of women may well be that they have often learned to be more helpless and passive than men. But any thoughtful discussion must also take into consideration the sociocultural and psychological factors that play pivotal roles in the victimizer's disposition to commit rape or other types of violence. The many ways in which the society tolerates or even encourages this behavior must also be considered. Cultures--and subcultures--differ markedly in their rates of violence, sexual abuse, and sexual molestation. While much has been written, and some research has been undertaken, our knowledge is still seriously deficient regarding what in our society contributes to these problems. Still less is known about how violence might be more effectively prevented.

Battered women. The problem of battered women is found in all communities, among all classes and ethnic groups. Like the other problems having mental health implications discussed in this section, the extent of the problem of battering is, at best, an educated guess. One large scale study reported that 3.8 percent of married couples admitted to at least one physical attack on the wife during the year--a total of 1,800,000 wives beaten annually if the sample figures are extrapolated to the total population (151). Stark and others (152) on the basis of an analysis of data from an emergency room setting, observed:

> ...where physicians saw 1 out of 35 of their patients as battered, a more accurate approximation is 1 in 4; where they acknowledged that 1 injury out of 20 resulted from domestic abuse, the actual figure approached 1 in 4. What they described as a rare occurrence was in reality an event of epidemic proportions.

It is difficult to do more than speculate about just what the collective repercussions of this behavior are for the mental health of women. But there can be little question that they are serious.

Rape. Although rape and sexual assault are problems of considerable magnitude, adequate data on their incidence and prevalence are lacking. In 1982, Federal Bureau of Investigation (FBI) statistics estimated that 76 out of every 100,000 females in the U.S. were rape victims; the total number of reported rapes was 77,763. But this, it is generally agreed, is a minimal estimate, certainly a gross understatement, of the actual extent of rape. Surveys done by the U.S. Department of Justice have found 2 to 3 times as many unreported as reported rapes. A 1978 study by the National Center for Prevention and Control of Rape suggests that the total number of rapes and attempted rapes may be 23 times as high as FBI reports indicate. This survey also suggests that 2 out of 5 women have experienced rape or attempted rape at least once in their lives (132). A random sample of 930 California women using well trained persons conducting in-depth interviews, found that 1 in 3 had been raped one or more times. Nearly half (44 percent) described one or more attempted rapes (153).

The weight of demographic evidence indicates that the risk of sexual assault is high--in 1981, 1,500,000 women are believed to have experienced rape or attempted rape. Those at highest risk are adolescents and young adults, Blacks at every age, single women, students, and women of lower socioeconomic status.

Elderly women, while less often raped, often live in profound dread of sexual assault and its possible consequences. A common overriding fear of these women is not the sexual assault itself, but of possible bodily injuries that may leave them permanently incapacitated (154). Many older women live alone in neighborhoods that have deteriorated, in public housing, and high crime areas. A 26-city study of several hundred rapes found that the fears of these women are often justified since women over 35 were about 50 percent more likely than younger women to incur additional injury beyond the rape itself, ranging from cuts and bruises to knife and gunshot wounds (155).

The immediate psychological consequences of sexual assault are often severe. Rape victims are frequently subject to feelings of depression, fear of death, sleep disturbance, nightmares and feelings of worthlessness, and self-blame. Other frequent consequences are the inability to leave home for more than short periods of time, a need to change residence, and impaired work performance. Sexual and marital problems following the experience are common. These short-term reactions constitute the acute phase, a period of psychological disequilibrium resulting from having experienced a profoundly threatening event. The process of psychological recovery is less clear. Follow-up studies show different patterns. About one-third of women victims report recovery over a period of months, but the remaining two-thirds describe a more prolonged recovery period requiring several years which are often marked by continuing anxiety and fear.

Sexual abuse of children. Data on the sexual abuse of children are even more elusive than those in the occurrence of rape. The National Center on Child Abuse and Neglect estimated that 44,700 children were sexually abused by a parent, guardian, or other caretaker in 1980. As with rape, it is likely that women consistently report that one-fifth to one-third were sexually abused at some point in their childhood (133). Russell (153), basing her findings on a random sample of California women, found nearly 2 out of 5 (38 percent) had sexual contact with an adult male during childhood.

Effects on child victims include depression, guilt, learning difficulties, later sexual promiscuity, running away from home, somatic complaints, and hysterical seizures. Some studies report minimal effects. Others show that women who are drug abusers and alcoholics often report having been sexually victimized as children.

Sexual dysfunction, negative self-image, and interpersonal difficulties also have been related to childhood sexual abuse. Events such as rape and sexual abuse occur in an individual context in which the victim's overall mental health plays an important role (156). As with other life experiences, individuals differ markedly in their psychological resiliency. This may explain the disparate findings regarding the duration to recovery and frequency of associated symptoms.

Women, Substance Abuse, and Mental Health--The Common Threads

For convenience, we have discussed alcohol dependence, other drug abuse, and the mental health of women as though each were a separate problem in a discrete population. But we have also noted from the outset that, in reality, the antecedents, the correlates, the resulting problems, and more importantly, the women themselves share important similarities. This is hardly surprising since persons struggling with emotional problems frequently use one or another psychoactive substance to ease their psychic pain. While there are large individual differences in the circumstances which lead women to abuse substances or to develop emotional problems this section is concerned with shared characteristics--the common threads in the origins and life experiences of all these women.

No discussion of these areas can ignore the persistent ways in which gender is involved in self-evaluation; the perceptions of others, including those of health care providers; and personal and societal expectations.

Social stigmatization. A recurrent theme in relation to women with problems of alcohol and other drug dependency is the greater stigma that society--and the women themselves--attach to their substance dependency. While there is general agreement that this is so, documenting what are often covert norms is more difficult. Knupfer (157) in her review of the norms surrounding drinking in women, cites a 20-year old survey reported by Clark (158) in which three-quarters of those sampled thought drunkenness was worse for a woman than for a man. Although there is undoubtedly greater tolerance for women who drink now, Knupfer stresses that there is little basis, for believing that there has been an increase in tolerance for drunkenness in women. A study of women entering alcohol treatment found that the overwhelming majority--84 percent--perceived themselves as more rejected than men because they were problem drinkers (159).

There is no reason to believe that women seriously involved with other drugs feel any less stigmatized. With respect to women addicts, Nurco and others (57) observed:

> "A pervasive theme running through the female addict's experiences...is her perceived position as 'the lowest of the low' from which there is little chance of return (in contrast with men who have always been able to regain respectability after being 'down in the gutter'").

While acknowledging that this feeling of self-abasement has changed somewhat in recent years, these investigators (and others) stress the greater deviancy of women heroin addicts compared to male addicts. Although opiate-dependent women are an extreme example, women abusers of other drugs probably feel more guilt and shame than their male counterparts. Since women generally have been found to have lower levels of self-esteem and more anxiety and depression than men, this conclusion is nearly inescapable (47).

Less serious emotional problems in women may be more "socially acceptable" than in men because of gender stereotypes regarding women's emotionality. However, the greater involvement of women in child rearing, concerns about losing their children, and society's lower tolerance for more serious nonconformity in women may make major mental illness a more serious emotional threat for them than for men. It may also cause them to avoid seeking much needed help. Little data exist on this point.

The result of one study showed that subjective ratings of the seriousness of various symptoms were influenced not simply by the gender of the raters but by how appropriate, to one's sex role, the particular symptom was in reaction to a specific situation (e.g. a male crying might be subjectively judged more serious than a woman responding by becoming tearful in a similar context) (160). Since women with emotional problems frequently abuse alcohol and other drugs, their views of themselves may be further eroded by their substance dependency.

Role expectations. We have discussed the contribution of gender-related role expectations to depression, but similar factors probably contribute to other psychological disorders as well as to the abuse of alcohol and other drugs. The traditionally subordinate status of women, their frequently dependent roles, and lesser economic and social self-sufficiency are considered by many researchers and clinicians to be significant factors in the etiology of their substance abuse (56, 157). Such factors have also been linked to the preference of some women for passively coping with problems by using prescribed psychoactive drugs (77, 78, 79). Women are much more frequently initiated into early or more deviant forms of drug abuse by members of the opposite sex than are men. This has been interpreted as an indication of the masculine focus of cultural authority and of justifying use as legitimate (47). As noted, husbands are far more likely to influence their wives to drink than the reverse, since a person of supposedly superior status is more likely to alter the behavior of someone of "lower status."

While these assertions are supported by research data, there is much still to be learned. Much less is known, for example, about the roles of husbands in the development of alcoholism in their wives although the role of wives in subtly encouraging alcoholism in their husbands is often emphasized (157). Since women's roles--and those of men--are in a rapid state of flux, the impact of these recent changes has only begun to be assessed. These changes create a "natural laboratory" in which it should be possible to more adequately examine the role of economic and social factors in the development of substance abuse and emotional problems in women.

Depressive symptoms. As we have discussed, there is good evidence that major depression (unipolar type) and depressive symptoms are more common in women than men. If the data available are accepted at face value, depression and associated symptoms are about twice as common in women. Even assuming that this higher frequency is somewhat inflated by the fact that women acknowledge symptoms more readily than do men or by other artifacts, the weight of evidence supports the conclusion that a real difference exists. This may partially explain why more than twice as many drug-related deaths in women over age 30 have been found to be suicides (53 percent versus 25 percent in men). The greater frequency of suicide attempts by women (although not of completed suicides) may be another indication that, on the average, women are more despairing in relation to serious emotional problems and possibly their alcohol and drug abuse as well.

Sleep disorders. Sleep disturbance is a common feature in alcohol abuse, alcoholism, abuse of other drugs and mental illness. Difficulty in sleeping, e.g. early awakening, is common in depression. Sedative-hypnotics are often prescribed for sleep disturbances. Use of psychoactive drugs also often alters normal sleep patterns. Rebound insomnia frequently occurs when sedativehypnotics are discontinued and sleep difficulties have been reported after chronic heavy use of marijuana (161). Although there has been little research on male-female differences in sleep disorders, particularly in relation to emotional illness and substance abuse in women, this may be a promising area for future study since it is a common element in the several areas.

Reproductive and sexual dysfunction. Reproductive and sexual dysfunction, as has been discussed in relation to substance abuse, is a frequent complication of alcohol and other drug dependency. Loss of libido is a concomitant of depression and of such disorders as anorexia nervosa. It is well recognized that emotional factors play an important role in sexual dysfunction. Endocrine function is affected by emotional states. It also plays a role in emotional illness and in reproduction. It affects the metabolism of alcohol and possibly other drugs as well.

Although this is a significant common thread, the complex interactions related to substance abuse, emotional illness, and sexual function are poorly understood and there has been little research studying these interrelationships.

As has also been discussed, rape and sexual abuse are more common in women who abuse alcohol and other drugs than in women generally and each each form of violence plays a role in emotional and mental illness. Chronically mentally ill women, especially the homeless, are at considerable risk of being sexually assaulted. The complex relationship of sexual violence and sexual exploitation to all of these problems have not been adequately explored. Sexual counseling has often been recommended as of therapeutic importance for substance-abusing women and may be an important aspect of other kinds of psychotherapy as well.

Barriers to treatment. Another common thread running through the mental health and substance abuse literature relates to the special barriers that confront women in seeking, accepting, and receiving treatment for their alcohol, drug and mental health problems and profiting from this treatment. These barriers may be usefully classified into three categories:

- Economic and Social.
- Professional Attitudes, Practices and Stereotypes.
- Unmet Treatment Needs of Women.

Economic and social barriers. The economic reality that women are more likely than men to be financially dependent, less likely to have a work-related identity, and more likely when employed to be paid significantly less than men for similar work, needs little restatement here. But the implications that these facts have for substance abusing or emotionally ill women deserves brief comment. There can be little question that economic and social barriers add significant stress to a woman's life and are serious impediments to treatment. Other aspects of a woman's social reality interact with her economic problems to increase the burden.

We know, for example, that the substance abusing woman is more likely to be divorced or separated than a nonabusing woman (47, 157). A similar situation is likely to prevail for the seriously emotionally disturbed woman. If she also has young children, a divorced woman is more likely than a married woman to have the sole financial and emotional responsibility for her children despite straitened circumstances. As with other lower income single mothers, she is also more likely to be dependent on public services. These facts limit treatment options for all women and may discourage them from seeking help.

The woman with a serious alcohol or other drug problem who remains married is also likely to have marriage related problems. Alcoholic women, for example, are frequently (30 percent to 65 percent of those in treatment) married to men who are also alcoholics (158). This increases the pressure on them to drink as well as encouraging them to deny their alcohol problems. According to results of recent research, women alcoholics experience greater resistance from their families and other intimates to entering treatment than do men (162). It was reported that women clients saw themselves as more likely than men to have problems with money, their children, and their friends because they enter treatment. They not only found less encouragement to seek help for their alcohol problems, but encountered active opposition. Similarly, addicted women who are married are likely to be involved with husbands caught up in a similarly deviant life style, making rehabilitation more difficult (59). Only a modest amount is known about the family interactions of alcoholic and heroin addicted women. Still less systematic data exist concerning the family dynamics of women who abuse other drugs or who are mentally ill.

If the woman who has substance-abuse or emotional problems is employed and becomes a "problem employee," her typically lower level position may mean that she is more likely to be seen as "expendable" rather than worth costly employer-assisted rehabilitation. Since, regardless of abilities, a woman is more likely to be employed at routine lower level jobs, impaired performance may go unnoticed, another barrier in seeking treatment (163). She may also not seek help out of fear of being labelled "mentally ill," "alcoholic," or a "drug abuser."

There are other economic and social barriers to rehabilitation. Women who have alcohol, drug, or mental health problems are, on the average, more likely to have limited education, lack job skills, and be of lower socioeconomic status. These same factors that aggravate their existing problems make rehabilitation more difficult as well (56, 157). Yet, the ability to earn a living and to be more independent, can be the important part of the rehabilitative process. The range of available jobs, at best, is more restrictive for women. With the other disabilities just described and with emotional and substance abuse problems, or both, job opportunities may be virtually nonexistent. Minority women who must also contend with racial or ethnic discrimination are at a still further disadvantage.

Professional attitudes, stereotypes, and practices. A second set of barriers to effective treatment are the attitudes, practices and stereotypic opinions regarding women by those who provide therapeutic assistance. For example, a review of the diagnostic labels assigned to those with mental disorders has pointed out that women more often are labeled as having disorders that are related to the ways in which they conform to traditional sex-role expectations. Earlier studies have described what can only be to emotional health in which the idealized concepts for a mature adult--gender unspecified--suit men better than women. Clinicians have different concepts of health in men and women and these reflect their sex-role expectations (164). In the treatment of females, adjustment is often stressed and women's anger is more likely to be labeled as "pathological" rather than an appropriate response to legitimate frustrations.

In their landmark study of the gender stereotypes put forward by psychiatrists, psychologists, and social workers, Broverman and her colleagues (164) make a telling point regarding persisting gender expectations by clinicians despite significant role changes:

> "By way of analogy, one could argue that a Black person who conformed to the 'pre-civil rights' southern Negro sterotype, that is, a docile, unambitious, childlike, etc., person, was well adjusted to his environment, and, therefore, a healthy and mature adult....Alternative definitions of mental health and maturity are implied by concepts of innate drives toward self-actualization, toward mastery of the environment, and toward fulfillment of one's potential....Such innate drives, in both Blacks and women are certainly in conflict with becoming adjusted to a social environment with associated restrictive stereotypes."

Scales for measuring "masculinity-feminity" also reflect traditional expectations. Many of these scales are as much as four decades old; few have been revised to take into account women's changing roles. Thus, they are likely to classify as "deviant," women (and men) who fail to conform to these earlier outdated "standards."

In drug treatment programs--as can probably be said of other programs as well--women have been described as at a serious disadvantage because of staff attitudes and expectations. Traditional treatment programs for substance abuse often are predominantly male in staffing and usually have predominantly male clients. There are problems likely to favor men by virtue of the way in which they articulate and reinforce treatment goals. Programs often have male staff who may hold negative, sometimes sexually charged attitudes toward the woman client. Staff of such programs may also be insensitive to the psychological and other specific treatment needs of women (48).

The problem of sexual exploitation of women patients or clients by staff is also real. Some studies concerning mental health services have found that as many as 11 percent of male psychologists report having sexual contact with their women patients (165). It is likely that sexual exploitation of women clients by alcohol and drug counselors who are men also occurs.

It is a debatable question as to whether the markedly greater prescribing of psychoactive drugs for women is appropriate. While some have argued that this represents an iatrogenic abuse, national survey data have suggested that prescribed psychotherapeutic drugs are usually taken appropriately for the purposes for which they were originally prescribed (38). Further research in this area would be helpful to clarify this issue.

Special treatment needs of women. A fundamental problem, repeatedly underscored by numerous accounts of the special needs of women. As we have seen in reviews of the separate areas, women who abuse alcohol and other drugs (especially those who are opiate addicted) are likely to be in significantly poorer health than their male counterparts and to have serious gynecological as well as other medical problems. For the most part these health needs are unmet. In one survey, over half (54 percent) of the drug treatment clients who are women had not received a gynecological examination although gynecological problems are common in this population (48). The special health needs of women alcoholics are probably no better served than those of the drug dependent.

The heightened risks to both the pregnant substance abuser and her unborn child also demand that adequate obstetric care be provided and good liaison maintained with health agencies that can provide such care (51).

Services, such as child care which may seem to be only marginally relevant, can be the linchpin without which treatment participation is impossible. One survey of alcohol treatment programs in California, for example, found that women were less likely to enter treatment when provisions for child care were lacking (162). There is also evidence that drug abusing women often avoid or abandon treatment because of conflicts around child care responsibilities. The vast majority of such programs make no provision to meet this need.

The need for vocational training, job placement, and educational counseling also is likely to be greater for women in treatment. Many lack marketable skills and are more likely to be unemployed than are male clients. Drug treatment clients who are women, for example, have less likelihood than men do, of being hired following treatment—three-quarters of these women were unemployed upon discharge from treatment during 1981 (44). There is evidence that unemployed women are also more likely to drink heavily (166).

Rape counseling and women only group therapy sessions concerned with sexuality have also been advocated for women in substance abuse treatment. As noted, they are far more likely to have been assaulted or sexually abused and to have problems concerning their sexuality than are nonabusing women (18, 36, 49).

Black, Hispanic, and other minority women bearing the triple burden of substance dependency or mental illness, sexism, and racism (or ethnic prejudice) need special help in overcoming stereotypes that undermine rehabilitation including frequent lack of self respect and of a positive self-image (167). Since they are often single parents and thus frequently economically disadvantaged, they are likely to have greater need for vocational and child care assistance.

Summary and Conclusions

There has been relatively little research specifically focusing on preventing alcohol, drug abuse, and mental health problems in women. But there is an emerging consensus regarding some of the elements needed in effective prevention. They may be usefully categorized into four areas:

1. Social aspects.
2. Public education.
3. Professional training and education.
4. Prevention-related research.

Societal aspects. Women's economically disadvantaged position plays a role in their emotional health and can be decisive in their rehabilitation should they develop alcohol and drug abuse, and mental health problems. Facilitating women's entry into the labor force, their remaining in it, and their reentry following periods of absence from it are all important aspects of prevention. Efforts to accomplish this must also take into account women's multiple roles. Because they usually bear primary responsibility for child rearing, provisions for child care are frequently critical if women are to improve their economic status.

Since the role of women (and men) in American society is so obviously in transition, encouraging the widest possible range of life options free of earlier sexual stereotypes is believed to be important. Key issues here are altering stereotypic roles which are inaccurate and frequently detrimental to women's interest; discouraging inappropriate dependency; encouraging life skills, job training, effective problem solving, and self-help; and the development of alternatives to alcohol and drug abuse for coping with difficulties.

There is a need for social support activities and organizational efforts to provide temporary assistance to women during periods of life transition and crisis. This is especially true for women who are single parents, abused spouses, or women who are in the process of divorcing or have just been widowed. Such women are at high risk of developing substance abuse and mental health problems or both.

Women bear a disproportionately heavy burden for the care of family members who are handicapped, chronically ill, or deinstitutionalized. "Respite care," to assist in meeting these responsibilities and to avoid having a caretakers themselves become emotional casualties, is a needed prevention initiative.

Because of their greater longevity, there are many more older women than men. In addition to their frequently straitened economic circumstances, many of these women suffer from multiple infirmities of age. If they are to continue to function as independent adults, programs to provide flexible levels of assistance on an on-going basis are needed.

Public education. Determining the effectiveness of public education in prevention is often difficult. There is obvious value in increasing the awareness of the general public as one facet of prevention. For example, it is now known that the effects of alcohol on women are greater than on men even when body weight is taken into account. This is the result of differences in fluid volume between men and women. Moreover, chronic effects of heavy drinking are also likely to develop more rapidly in women. Both of these facts are not well known, even to professionals. Heightened public awareness of possible adverse effects of alcohol and other drugs (e.g., tobacco and marijuana) on the developing fetus can have a positive effect. Evidence that public education in these areas has been effective in reducing maternal alcohol and tobacco abuse is encouraging. The recent decline in youthful drug abuse has also been partially attributed to young people becoming more aware of the hazards.

Professional training and education. Health care professionals are central both as care providers and sources of information. They also provide role guidance to women. Like the general public, however, these professionals are by no means free of sexual stereotypes affecting their functioning. One source of such stereotypes is an inadequate appreciation of current research on female physiology and its relationship to mental and physical symptoms.

Recent advances in pharmacology provide multiple indications that the effects of psychoactive drugs (including alcohol) are gender-related as well as effected by the stage of the menstrual cycle at which they are consumed. New knowledge in this area has led Hamilton and Parry (113), for example, to recommend that physicians receive training in "gynecological pharmacology." This would enable doctors to better appreciate the potential effects of psychoactive and contraceptive drugs on women.

Basic science data also indicate that estrogens have profound effects on brain neurochemistry. The menstrual cycle may affect the type and course of depression and response to antidepressive medication. Premenstrual syndrome (PMS) has also been implicated in anxiety and insomnia. While the role of PMS and other cyclical changes have not been adequately studied in relation to alcohol and drug abuse, it would be surprising if they were unrelated. Evidence also exists that oral contraceptives may precipitate depression in vulnerable women. There is a very real need to incorporate these insights into the training of health professionals who deal with women and their mental health, alcohol, and drug abuse problems.

Training is also needed to increase professionals' understanding and recognition of how gender differences in development and social roles impact on women's mental health. Professional stereotypes can limit the type and number of treatment options offered. Women's likelihood of effectively coping and of having realistic expectations of themselves can also be significantly altered by caregiver biases. Better training of professionals working in several areas can make them more aware of how their own stereotypic thinking affects patients care. Such training is an important element of secondary prevention.

Needed prevention-related research. As indicated, the amount of prevention-related research that is applied particularly to women, is very limited. More thoughtful prevention efforts require much more detailed knowledge concerning the etiology of alcohol and drug abuse, and mental health problems in women and the effectiveness of our prevention strategies.

Results of the still modest amount of basic science research on the complex interrelationship of drugs and female physiology suggest that such work has impressive potential for primary prevention efforts. This research has already dispelled some of the sexual stereotypes regarding the relationship of emotional and physical illness in women and is likely to dispel still more. If, for example, the origins of depression were better understood, women's present greater vulnerability to this illness might be reduced.

Biological research may also assist prevention efforts in better predicting those women who are especially vulnerable to the effects of alcohol and drug abuse or to developing emotional problems. Such women could then be the focus of more intensive prevention effort before they develop difficulties.

There is little longitudinal data on the natural history of most of these problems. Studies of groups at high risk are badly needed. As indicate, emotional problems and alcohol and drug abuse are frequently interrelated. One example is the single teenage mother. She is confronted with the responsibilities of adulthood for which she is poorly equipped. Because she so often drops out of school, she is unlikely to develop adequate vocational skills. The interval before having another child is likely to be shorter than it would be for an older mother. Initially dependent on her family, she is likely to become dependent on the welfare system because of her limited earning capacity. Her children, too, have a high probability of becoming trapped in a similar cycle of inadequacy, chronic dependency, and limited life options. The potentially very high long-term human and economic costs to the society would readily justify intensive prevention.

The development and testing of more specific prevention models is contingent on better understanding the etiology and course of alcohol, drug abuse, and mental health problems in women of minority status as well. For the most part, this knowledge is nonexistent.

Evaluating a program's success in primary prevention is particularly difficult. While knowledge can be disseminated, and some attitudes can be changed by prevention programs, especially in the alcohol and drug abuse area, enduring changes in use of these substances in response to a specific program are uncommon.

It is easy to argue that women's likelihood of abusing drugs (including alcohol and tobacco) and of becoming mentally ill are somehow related to their traditional subordinate status in society and that given dignity and choice equal to that of men, these problems will diminish. But it can also be argued that rapid social change has placed enormous burdens upon women to embrace both the new "equality" with its vocational responsibilities and their traditional responsibilities as wives and mothers. As with so many abstractions, either generalization does violence to large individual differences among women and also ignores such important sources of difference as socioeconomic status, education, and ethnic-racial identity. The complexity of such issues makes any glib discussion suspect. It does, however, argue the urgent necessity of better research on the psychocultural origins and course of women's alcohol and drug abuse and mental health problems if prevention is to be based on solid research findings.

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Commissioned Paper

Guidelines for Avoiding Methodological and Policy-Making Biases in Gender-Related Health Research

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This commissioned paper was prepared while the author was Head, Biology of Depression Research Unit, Center for Studies of Affective Disorders, CRB, DERP, National Institute of Mental Health.

An informal subcommittee of PHS staff who reviewed and commented on an earlier version of this manuscript included: Wendy Baldwin, Ph.D., National Institute of Child Health and Development/NIH; Steven Cohen, Ph.D., National Center for Health Services Research; and Elaine Baker, Ph.D., National Heart, Lung and Blood Institute/NIH.

Avoiding Methodological and Policy-Making Biases in Gender-Related Health Research

Introduction

Health care decisions depend on the information provided to practitioners and to the public through a variety of health-related sciences. Because health care is a legitimate concern of all people, the health professions are obligated to seek ways of ensuring that clinical decisions are based on science that adequately pertains to all people.

If men and women were physiologically identical and held equal social roles, there would be no need for comparative studies related to gender. Despite considerable overlap in psychobiological functioning, we now know that some of these differences can be critical to the understanding and treatment of certain illnesses. For example, hormones produced by the gonadal and other ograns have far-reaching, systemic effects and can differentially influence a variety of disease processes, as well as treatment outcomes, in women as compared to men (1, 2). Demographic variables, related in part to social roles, also help clinicians to predict gender differences in the onset, natural course, and recovery process of some illnesses (3).

In order to provide appropriate health care to men and women, physiological and other significant differences must be recognized when they exist. Given the high degree of similarities in the functioning of men and of women (4), how are we to assess when it is critical to investigate possible differences unless adequate studies are first carried out?

Precisely because the answer to this question is not obvious, this paper explores ways of better assessing when, and in what circumstances, gender-related differences deserve investigation. Even when gender differences are recognized as potentially important to clinical care, a corollary concern has to do with feasibility. Because prospective studies require a sample size that is large enough to ensure an adequate incidence of a disorder at follow up, feasibility is a difficult issue when prevalence of a disorder is very low.

Gender-related differences are known to occur in the distribution or incidence of many disorders. When these differences are large, a much greater proportion of resources must be allocated in order to study an equal number of cases for the lower-incidence group. These and other considerations often contribute to a decision to study the disorder primarily in the higher-incidence subgroup. This approach to investigation may inadvertently reinforce stereotypic notions that the disorder is pertinent to only one gender.

For example, heart disease occurs more frequently in men as compared to women. This does not automatically mean, however, that heart disease is either less important, or unimportant, in women. In fact, women live longer than men, and heart disease is a leading cause of death in older women. Moreover, the morbidity (5) and mortality of certain cardiac events may actually be higher in women as compared to men. Even though the lower incidence of heart disease in women as compared to men makes it relatively more expensive to study it prospectively in women, there is clearly a need for adequate information to guide decisions about health care in this subgroup of the population.

Because of limited resources for health-related research, the question of feasibility is ultimately tied to our ability to predict what studies will either "make a difference," or will make a greater difference than others. As the health care needs of various subgroups and as proposed studies of various disorders compete for funding, decisions must be made about the likely pay-off of one set of studies as compared to others. That is, a study may be scientifically do-able and meaningful, but the critical question is, at what price, or with what relative priority?

There has been a long tradition of competition for resources in terms of the percentage of the population affected or at risk for a disorder, although a seemingly low percentage of the population may disguise the fact million that millions of people are nonetheless affected. Alternatively, arguments commonly have been framed in terms of a disorder's economic impact (e.g., dollars spent on treatment and the value of time lost from work).

But the absolute prevalence of a disorder in the population is no longer accepted as the premier or sole guide to what health-related research gets done. Instead, there is increasing recognition of the long-standing perspective held by many clinicians, that the incidence of a disorder is 100 percent when the unit of analysis is the individual actually affected. For example, the investigation of drugs for relatively rare conditions has been termed "orphan" drug research, in recognition of the fact that the constituency group for rare drugs and disorders is small by definition, and is, therefore, orphaned by traditional research justifications. Although women are not a minority of the overall population, women are vulnerable to having their health needs overlooked, particularly when they comprise the relatively low-incidence group for a disorder (e.g., heart disease), or when a problem is thought to be unique to women, or to a small percentage of women (e.g., menstrual-related symptoms). These health concerns are taken to be less important in comparison to problems that affect a greater percentage of the population, by virtue of their affecting both men and women, (e.g., cancer). As Estelle Ramey (1) has repeatedly demonstrated, however, gender-comparative research may be critical in determining what protects the low-incidence group, and this information may eventually benefit the high-incidence group as well.

While scientists can advise policy-makers as to the criteria required for adequate sample sizes and for methods to ensure that studies are both do-able and well-designed, the ultimate decision about "how much" gender-related knowledge is worth must be guided by societal values. As a specific example, science cannot tell us whether it is worth 250 percent of the cost required for studies in men (3,806 men and no women, to be exact), to gather equivalent information about the usefulness of cholesterol-lowering drugs for heart disease in women (6). Science can remind policy-makers of limitations in generalizing results from one gender to the other. It cannot tell us whether it is relatively worthwhile to gather epidemiological data relevant to women's health in order to assess risk factors across the life cycle in women. For these reasons, an important issue is to clarify scientific, as opposed to more the value-laden, policy-related aspects of these decisions. Unless decisionmaking processes are better articulated, there is a risk that unexamined assumptions, blind-spots, and other biases will guide choices about gender-related health research.

Although scientific and policy issues are clearly related, they are treated separately in this discussion. Two main types of scientific issues are addressed: (a) the methods needed to identify, and to clarify the clinical significance of possible gender-related differences; (b) the assessment of whether certain studies can be done, and if so, how competing concerns about research design--such as the desire to generalize findings across both genders--are weighed against the desire to make studies more feasible by selecting a homogenous population. Finally, several policy considerations are discussed and specific conclusions are presented.

Scientific Issues

Exploring possible refinements in the scientific methods used in health care research is clearly in keeping with the history of progress in this field. There is a continual need in science to reassess what is known, to identify gaps in knowledge, and to integrate revised assumptions, questions, and methods into the process of doing research. In recognition of the revisions that are inherent in science, for example, the National Institutes of Health have held Consensus Development Conferences and issued Guidelines for state-of-the-art research in various fields. The scientific method requires continual updates so that investigators have access to a set of procedures that will help safeguard their findings from as many blind-spots and other sources of error or bias as is currently possible.

Methodological Issues

Since science begins with the very questions asked--and with the samples we look to for answers--state-of-the-art methods must be made available to scientists in order to assure their consideration of the variety of research concerns that are inevitably in competition. What follows is not intended to be an exhaustive discussion of methodological issues pertinent to gender-related research but rather, is a sampling of issues that deserve further attention in health-related research. Many of these issues have been previously identified and are further clarified elsewhere (7).

Defining the appropriate topics and populations for study. One clue to the need for gender-related comparisons is the existence of sex-differentials in epidemiological studies. Even without epidemiological data, investigators should be urged to at least consider the possibility of comparative studies using subjects of each sex. A screening procedure such as this would not only help to crystallize hypotheses, but would also help to clarify previously unexamined assumprions that might relate to stereotypic views of women and of men. As examples, heart disease has been stereotyped as a man's disease, and negative behavior possibly related to hormonal changes (the so-called "raging hormones") has neen stereotyped as a woman's disease. An unfortunate consequence of these stereotypes is that both groups are deprived of potentially useful information that might be derived from comparative, gender-related studies in both sexes.

A prominent example of the failure to explore comparative models consists in the preference among clinical investigators for the study of negative sysmptom in relation to changes in ovarian steroid hormones in women, with the concurrent neglect of possible correlates of androgenic steroid variations or cycles in men. In contrast, comparative methods would suggest an examination of hormone fluctuations, as well as age-related neuroendocrine changes, and their correlates, as they occur over time in both men and women.

The conceptualization and labeling of variables. Investigators will also want to guard against the intrusion of cultural stereotypes into their conceptualization and labeling of research variables. In describing the behavior of female children, for example, pediatricians and endocrinologists, among others, will want to avoid terms like "tomboyism" that reflect assumptions about sex-appropriate behavior. Symptoms in either sex deserve careful investigation and it is now generally recognized as premature to interpret complaints in women according to stereotypes like "hysteria," particularly in the absence of precise, empirical data collection.

A related problem is that sex-specific conceptualizations may precede the investigation of more sex-neutral conceptualizations of variables, thereby tending to reinforce stereotypic views. An example is the tendency to define and explore "aggression" in males rather than in females. A better method might be to elaborate sex-neutral subcategories related to the concept of aggression. Other "normative" assumptions are often embedded into research. Only by a procedure where investigators seek help from peers in screening their thinking at the outset can these issues begin to be addressed.

Measurements: reliability, validity, range and content, and comparability over time. Research on women's health too often suffers from a neglect of basic methodological issues such as the assessment of reliability and validity, where reliability refers to a measurement being consistent and repeatable, and validity refers to a measurement actually varying in relation to what it purports to measure, as assessed in other ways. With a particular emphasis on topics of concern to women, Koeske (8) has detailed the need for a more sophisticated approach to measurement. For example, measures used to assess changes in symptomatology across the menstrual cycle are often poorly standardized and do not give sufficient attention to the problem of measurement reactivity when repeated measures are used.

As Koeske points out, for physiological as well as social variables, there is disagreement about how to characterize functioning that varies over time for both physiological and social variables; and attention has rarely been paid to the problems of assessing random error or irrelevant cyclical variation in the data, and of delineating systematic variations in self-perceptions from measurement error in self-reports.

In addition to the question of was it "measured well," we must also ask "how did what we value/expect" influence what we measured (8). Many of the instruments in current use, for example, are not adequate for the assessment of the full range of positive as well as negative changes, nor for the investigation of subclinical patterns of change.

Rethinking strategies to decrease variance in the data. In applying the scienftific method to the health sciences in particular, the researcher is immediately confronted with a dilemma that goes beyond each individual study or investigator. That is, there is a need to address the greater issue of striking a balance between two competing concerns: first that of selecting a homogenous sample of subjects--in order to decrease sources of unwanted or uncontrolled variance, thereby attempting to maximize the likelihood of achieving clear results; and second, the need to acquire scientific information that can be reliably generalized to the health care needs of the more heterogeneous, overall population, where a diversity of subgroups of possible clinical significance can be defined by variables like age, (race), sex, or other gender-related characteristics such as hormonal status. Of course, it is much more complicated as well as more costly and time-consuming to select subjects in a way that allows for a reliable assessment of possible age and gender effects. If the menstrual cycle in women was not expected to contribute to variability in other measurements, then women might be included more often in research studies, along with men (7).

Precisely because the menstrual cycle does have effects, it requires study as a separate variable pertinent to women's health. Paradoxically, however, the exact reason that the menstrual cycle--and women--should be included, has been used to exclude women from research , on the grounds that a "homogeneous" sample is more feasible. The preference for male research subjects is documented for both psychological (7) and for certain biomedical studies (2).

Particularly for small studies (N = 10 per group) it may be appropriate to decrease menstrual effects on variability by testing females in one phase of the menstrual cycle (e.g., the postmenstrual, or follicular phase, when there is the l;east hormonal variability). While the choice of studying female subjects at one time in their menstrual or life cycles may help to decrease unwanted variance, it must be remembered that this approach does not shed light on possible timing-related effects that may be important ito women's health.

Even when women are included as subjects along with men, in relatively small studies the researcher is often unable to tease apart the source of possible sex-related effects, or to stratify the samples in order to examine possible age or ovarian status effects. Larger studies (e.g., N = 100) begin to allow the possibility of investigating the effects of menstrual cycle-phase or menopausal status on other variables.

Particularly for biomedical treatment trials, investigators should consider defining subgroups of men and women according to their hormonal status. For example, the menstrual cycle may be a significant source of variance in psychopharmacology research (9). When women are excluded from early phases of clinical drug testing (10) however, the result is to initially expose only men to side-effects. Additionally, there may be a sieve-effect, where the lack of comparative studies at the outset precludes a full examination by sex. In a careful review, for example, Raskin (11) concluded that antidepressants are more effective for males (in whom they are initially tested clinically), despite the fact that more women than men are depressed and are treated for depression.

On the need for more rigorous analysis and interpretation of the data. Several methodological approaches may help investigators to appreciate gender-related differences when they exist. Unfortunately, experimental pharmacologists continue to draw conclusions about the lack of gender-related differences in drug response from inadequate sample sizes, which are too often on the order of 3 to 5 subjects per group; an exapmle of this problem is a recent report in a major journal on bromocriptine, a clinically used drug. Power analysis (12), can help researchers determine whether the sample size actually permits gender-related conclusions, given the actual or predicted variance in their measures. Before comparisons are made, data should also be checked for whether statistics that rely on a normal distribution are applicable, e.g., skew on frequency analyses, considering log-transformation of the data when appropriate.

Investigators are urged to utilize both the mean and the variance as descriptive statistics. For example, even when a difference in mean values is not found, subgroups defined by gender may differ in the varience. Of course, a large varience in one group would decrease the likelihood of reaching statistical significance. The excess variance would decrease the likelihood of reaching statistical significance. The excess variance would also need to be accounted for. Analysis of variance programs are routinely available for statistical comparisons of differences in variance, per se, e.g., the Bartlett-Box test for homogeneity of variance.

When correlation are compared between the sexes, it is not enough simply to observe significance versus nonsignificance. Instead, the R values must be transformed to Z-scores and tested for statistical differences (13).

There is an increasing literature on clinical decision-making, which should prove useful in assessing whether statistical differences are actually significant clinically. For example, if the incidence of a disorder is extremely low, then a risk factor that doubles the incidence may be statistically significant, yet account for a trivial amount of the variance clinically.

Feasibility in research design. Some gender related research is potentially important and of interest, but is difficult, if not impossiblem to carry out. Examples include the study of rare events, such as pregnancy in the young teenager. Even if work on this topic was scientifically and ethically approved, it does not seem likely that many parents would allow their 11-year-old daughter to participate in a prospective study of sexuality. Although teenage fathers were initially overlooked in pregnancy-related research, when investigators did become interested and try to include them in studies, a number of practical problems were encountered. For example, it is difficult to identify the fathers and to interest them in participation in the research.

Policy Considerations

As suggested in the introduction to this paper, certain types of research may not be routinely conceptualized as valuable, at least not in comparison with other wee-established priorities. Assessments of value and feasibility enter into peer reviews of scientific merit as well, although this clearly overlaps with policy considerations. Examples of these issues are discussed below.

O[illegible]he need to envision integrative and life-span research. We know relatively little about the natural course of symptomatology throughout women's lives. Even the inter-relationships between reproductive or steroid hormone related events across the life-cycle have remained largely unexplored, e.g., menarche, contraceptive-induced symptoms, pregnancy and post-partum changes, menstrual cycle related changes, and menopause. No systematic attempts have been made, for example, to determine whether women with premenstrual symptoms are at a greater risk for perimenopausal problems (14). We do not know if benign breast changes such as those occuring premenstrually predict more severe breast disease. A variety of such interconnections need to be explored with longitudinal as well as cross-sectional methods, and when appropriate, transformed into clinically useful estimates of relative risk. At the present time, however, individual proposals are most likely to be considered too extensive in scope, or simply "unfeasible," despite the fact that this type of information on women's basic physiological functioning over time is do-able by existing methods and is extremely pertinent to women's health.

Comparative research as a methodological approach basic to an understanding of women's health. Comparisions in science are not limited to the selection of subjects for control groups. Examples of other pertinent comparisons include those across time, species, life events, and drug dosage as well as age and sex. In fact, comparisons are essential to the interpretation of all data, including that which has to do with the meaning and magnitude if health related symptoms. For instance, until a baseline is established for the comparison of possible menstrual-related effects--in relation to those associated with other biological rythms or life events--the significance of the range of effects in uninterpretable in important ways. As a specific example, how do premenstrual changes, as experienced by the majority of women, compare to jet-lag, or to Monday-morning blues, as experienced by both men and women.

On the need for more explanatory research designs: an appreciation of context and interactive models of causality. When gender-related differences are observed, investigators must consider the full range of hypotheses which might account for differences. For example, genetic sex, sex-related hormones, gender role and orientation (preference of sexual partner), and social expectations, must be distinguished, and the causal factors relevant to their understanding explored.

While scientists must focus their research designs and simplify the hypothesis and conditions of their studies as much as possible, they must avoid over-simplification. The nature versus nurture dichotomy, for example, obscures our understanding of the developmental process and obscures the interaction of innate and learned, psychosocial processes. Similarly, biological models derived solely from animal studies, risk neglecting the fact that humans have more plasticity due to cortical inhibition in overriding innate tendencies. That is, much research focuses on models of 100 percent impairment or incapacitation, without an adequate appreciation of the great variety of modifying or compensatory control mechanisms.

Another example of over-simplificiation is the tendency to prefer one-directional, causal models, despite data on reciprocal bi-directional and situational effects in disciplines that range from endocrinology to pharmacology (15, 16). Particularly for understanding human, gender-related health, we need more interactive and contextual models that address the actual complexity of the phenomena that is the subject of explanation. One example is the need for more phenomenological definitions of symptoms, along with increased regognition that psychology, behavioral studies, and sociology are among the "basic sciences" for health research. Research on heart disease is one example of a field where it is recognized that both psychological stress and behaviors such as eating and cigarette smoking influence the onset and natural course of a disease process.

Discussion

The improtance of gender as a variable in health related research is documented throughout this volume. For example, general medicine, as a major health care speciality, has long recognized both age and sex as being among the potentially useful guides for defining subgroups of people at risk for altered functioning in certain circumstances, and for predicting differential treatment responsivity. Clinical case presentations typically begin with the patients' age and sex, and all textbooks of pathophysiology describe pertinent demographic variables. This undoubtably follows from the need for health care practitioners to recognize clinically significant differences between subgroups when these exist in order to provide equivalent and adequate health care. Although these subgroups are often more similar than different, it is understandable that health care providers prefer to err on the side of safety (statistically, this is known as guarding against a Type II error). The implication is that these variables should be assumed significant until proven otherwise, instead of the reverse.

That is, to the extent that our goal is a general science, for all people's health, it is critical to avoid prematurely restricting the range of inquiry to any one age or sex, despite concerns about homogeneity and feasibility in research. Yet we know that certain issues have been studied almost exclusively in either men or in women, when in fact the phenomena pertains to both genders. Contraception, hormone-related mood and behavior changes, and parenthood are but a few examples of topics that are now gaining recognition as requiring gender-based research in both males and in females. To continue the non-parallel pattern of problem definition and data collection would clearly impede the development of more general models for the health-related sciences, and reinforce sterotypic rather than scientific views of both women and men.

Perhaps most analogous to gender as a variable in health-related research is age. In fact, the two are difficult to separate because of life-cycle variations related to health which differ between males and females. Just as the National Institute of Aging (NIA) has facilitated an awareness of age as a crucial variable in the sciences basic to health care, gender-related research deserves attention as well.

Summary and Conclusions

Despite the need for homogeneous research groups, the overall population is heterogeneous, and health-related findings must be generalizable in well-specified ways. Women's health needs, like those of the rest of the population, are fundamentally important and continually deserve serious, thoughtful attention from the leaders in health research. The clarification of methodological issues pertinent to gender-related research will be a first step toward enhancing women's health, as well as men's (1). Possible approaches toward these goals are as follows:

- PHS consensus-development conference on "Gender-related Methods for Health Research" (for the development of guidelines) should be held.

- The feasiblity of including women in certain types of research needs to be reexamined. Part of the reason for the relative neglect of gender-related variables in pharmacological research may come from understandable concerns about including women of childbearing years in the first two stages of clinical trials because of the risk for pregnancy (10).

  In view of the presumed importance of gender in research as well as the availability of reliable means of selecting samples of women who are not at risk of pregnancy, these guidelines should be reconsidered. Examples of women who might be included even in the early stages of drug testing include those: (a) whose exclusive sexual partner has undergone a vasectomy; (b) who are celibate; (c) who are lesbians not planning to have children, and (d) who have undergone a hysterectomy.

- A number of working groups should be formed: A working-group to reconsider the difficult ethical issues of including women in pharmacological research (e.g., extra-protection for women as research subjects, versus other means for infomed consent).

  A working-group to identify and to consider mechanisms to enhance the kind of multi-center, collaborative or clinical research center studies that would be most efficient in advancing our understanding of women and their health (e.g., to obtain adequate numbers and uniformity, a collaborative study would be most parsimonious, particularly when one considers the need for longitudinal, and systematic follow-up).

A working group or committee to consider ways to foster subject-selection in a way that allows for an examination of possible age, sex, and hormonal status effects, e.g., NIA has put aside special funds to supplement other studies in order to provide a control group of older research subjects for age comparison (17). This group might also develop guidelines with regard to when it is acceptable or advisable to defer work on subgroups of the population, for how long, and for what reasons; implicit in these considerations is the issue of building some kind of follow-up inspection into the system in order to ensure that generalization is addressed. Scientific review would also be needed on an ongoing basis to evaluate the possible clinical significance or statistical differences for subgroups defined by gender.

* * *

Appendix

PUBLIC HEALTH SERVICE TASK FORCE ON WOMEN'S HEALTH ISSUES

Participating Agencies and Offices:

Alcohol, Drug Abuse, and Mental Health Administration
Centers for Disease Control
Food and Drug Administration
Health Resourcers and Services Administration
National Institutes of Health
Office of the Assistant Secretary for Health (OASH)
Office of Intergovernmental Affairs

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Commissioned Papers Titles and Authors

Alcohol and Maternal and Fetal Health	Kenneth Warren, Ph.D.
Arranging for Child Care: Implications for the Well-Being of Employed Mothers and Their Children	Martha Zaslow, Ph.D. Beth Rabinovich, Ph.D. Joan Suwalsky, M.S. Robert Klein, Ph.D.
Cancer in Women	Harriet Page
Guidelines for Avoiding Methodological and Policy-Making Biases in Gender-Related Health Research	Jean A. Hamilton, M.D.
Heart Disease in Women	Barbara Packard, M.D., Ph.D.
Immunizations of Special Importance to Women	Ida M. Onorato, M.D.
Nutritional Issues in Women	Artemis P. Simopoulos, M.D.
Osteoporosis	Lawrence E. Shulman, M.D., Ph.D.
Premenstrual Syndrome	Miriam Davis, Ph.D.
Smoking and Women's Health	Thomas J. Glynn, Ph.D. Joseph W. Cullen, Ph.D.
Systemic Lupus Erythematosus	Lawrence E. Shulman, M.D., Ph.D.
Special Health Concerns of Ethnic Minority Women	Audrey Manley, M.D. Jane S. Lin-Fu, M.D. Magdelena Miranda Allan Noonan, M.D. Tanya Parker

Social Factors Affecting Women's Health

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